FINAL

ENVIRONMENTAL CONDITION OF PROPERTY REPORT

STANLEY R. MICKELSEN
SAFEGUARD COMPLEX
NEKOMA, NORTH DAKOTA

Army Chief of Staff for Installation Management

Prepared by

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT

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ENVIRONMENTAL CONDITION OF PROPERTY REPORT

CERTIFICATION

Evidence was discovered during the assessment that hazardous substances defined by 42 USC § 9601 (14) or petroleum products may have been released or disposed on the Stanley R. Mickelsen Safeguard Complex (SRMSC) Missile Site Radar (MSR) property and the four affiliated Remote SPRINT Launch (RSL) sites. In accordance with the classification system American Society for Testing and Materials (ASTM) D5746-98 (2002), *Standard Classification of Environmental Condition of Property Area Types for Defense Base Closure and Realignment Facilities*, the SRMSC MSR property and affiliated RSL sites are primarily an Environmental Condition of Property (ECP) Area Type 1 with the following exceptions:

- SPARTAN launch silos on the MSR property (ECP Area Type 6),
- Missile Site Control Building and the MSR Power Plant on the MSR property (ECP Area Type 5),
- Heat Sink on the MSR property (ECP Area Type 7), and
- Heat Sinks at each of the four RSL sites (ECP Area Type 6)

The MSR property is a geographically contiguous area or parcel of real estate where the results of the investigation revealed that hazardous substances or petroleum products or their derivatives may have been released, or disposed of on site property. The four RSL sites are parcels or real properties that are geographically separate from the MSR property as well as from each other and where the results of the investigation revealed that hazardous substances or petroleum products or their derivatives may have been released, or disposed of on site property. SRMSC MSR property and the four associated RSL sites may have hazardous locations and potential contamination may be suspected from past activities.

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EXECUTIVE SUMMARY

This Executive Summary provides a brief description of the current and former uses of the Stanley R. Mickelsen Safeguard Complex (SRMSC) and areas of recognized environmental condition (REC) that were evaluated during the Environmental Condition of Property (ECP) process. Detailed information associated with the summary presented below is provided in the remaining portion of this document.

The SRMSC was an Anti-Ballistic Missile (ABM) site and consisted of four Remote SPRINT Launch (RSL) sites (1 through 4), the Missile Site Radar (MSR) property, and the Perimeter Acquisition Radar (PAR) complex. The five property parcels evaluated in this ECP are the four RSL Sites and the MSR Site. These five property parcels are located in extreme northeast North Dakota in Cavalier, Ramsey, and Walsh Counties.

This report was developed in conformance with the limitations of the American Society for Testing and Materials (ASTM) Designation D6008-96 (2005), *Standard Practice for Conducting Environmental Baseline Surveys* and ASTM D5746-98 (2002) *Standard Classification of Environmental Conditions of Property Area Types.* In support of the ECP report, the USACE inspected the five applicable sites of the SRMSC and performed a reconnaissance of the surrounding areas during the week of 19-22 October, 2009.

SITE DESCRIPTION & HISTORICAL USE

The mission of the SRMSC was to detect incoming ballistic missiles fired over the North Pole and fire defensive missiles (USASMDC, 2001, p. 1-1). The SRMSC became fully operational on October 1975 and according to US Army Center for Health Promotion and Preventative Medicine (USACHPPM) was deactivated two months later in December 1975, after the signing of the Strategic Arms Limitation Talks (SALT) agreement (USASSDC, 1994b, p. 8). No missiles were ever fired during the facility's operation period (USASMDC, 2001, p. 1-1). The four RSL Sites have been under U.S. Army control since they were excessed in 1977. The MSR Site property was excessed by the U.S. General Services Administration (GSA) in 1977, the Non-Tactical Area was transferred to the Department of the Interior in 1979 for use as a Youth Camp (that closed in 1981), transferred from the GSA to the Department of the Army in 1985, and placed into a caretaker status. The Tactical Area remained under U.S. Army control throughout this period.

There were 30 buildings and 26 structures at the original MSR property. Tactical facilities including the MSR weapon storage bunkers, MSR radar building and power plant, MSR and RSL heat sink structures, RSL Remote Launch Operations buildings, RSL Limited Area Sentry Stations, and RSL Exclusion Area Sentry Stations were constructed of reinforced concrete to withstand a nuclear blast (USASSDC, 1995a, pp. 6-23-25). Thirty below ground SPARTAN missile cells/silos at the MSR, sixteen below ground SPRINT missile cells/silos at the MSR, and fifty-four below ground Sprint cells/silos distributed among the four RSL sites were constructed in a similar manner. All nuclear hardened structures are lined with steel plate for electromagnetic pulse protection (USASSDC, 1995a, p. 6-9). Between twelve and sixteen SPRINT missile cells/silos were constructed at each of

the four RSL sites. The SRMSC was the first operational ABM facility ever completed in the United States (HAER, 1996a, p. 1).

Land use in the SRMSC vicinity was exclusively agricultural prior to the construction of the SRMSC and currently nearly 90 percent of land in agricultural use (USASSDC, 1994, p. 2-13). The physical setting at the SRMSC is dominated by cultivated crops, farmsteads, wetlands, and wind turbine, radio, and microwave towers. The rural landscape is relatively flat, drained by intermittent streams eventually to the Red River. The most prominent natural landscape feature is the rugged terrain along the Pembina Escarpment (USASMDC, 2003, p. 10).

ENVIRONMENTAL CONDITION OF PROPERTY

The MSR property and the four associated RSL sites were classified based upon the seven following Standard Environmental Condition of Property Types described in ASTM Designation D5746-98 (2002), *Standard Classification of Environmental Condition of Property Area Types for Defense Base Closure and Realignment Facilities*.

- *Standard Environmental Condition of Property Area Type 1* -- An area or parcel of real property where no release or disposal of hazardous substances or petroleum products or their derivatives has occurred (including no migration of these substances from adjacent properties).
- *Standard Environmental Condition of Property Area Type 2* -- An area or parcel of real property where only the release or disposal of petroleum products or their derivatives has occurred.
- *Standard Environmental Condition of Property Area Type 3* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.
- *Standard Environmental Condition of Property Area Type 4* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken.
- *Standard Environmental Condition of Property Area Type 5* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred and removal or remedial actions, or both, are under way, but all required actions have not yet been taken.
- *Standard Environmental Condition of Property Area Type 6* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but required response actions have not yet been initiated.
- *Standard Environmental Condition of Property Area Type 7* -- An area or parcel of real property that is unevaluated or requires additional evaluation.

According to the 2000 *Final National Missile Defense Joint Program Office Parcel-Specific Environmental Baseline Survey (EBS)* (NMDJPO, 2000), most of the property at the MSR was classified Category 1 ("category" used to define property in an EBS are similar to "type" used to define property in an ECP). There were only a few exceptions. Discharge of industrial wastewater had occurred to the southern cell of the three-cell wastewater stabilization lagoon (Structure 385), but contaminant concentrations in the sediment were below background levels. The lagoon portion of the MSR property site was then classified as Category 3 property.

Directly south of the lagoon was the former Fire Water Storage Pond. This Pond filled in and has been overgrown with vegetation since the late 1990s. It was classified Category 6 because volatile organic compounds (trichloroethylene and trichlorofluoromethane) were detected in the groundwater in concentrations above action levels. However, the 2001 *Final CERCLA Expanded Site Inspection* (USASMDC, 2001) concluded that "… no further investigation or remedial action of groundwater associated with this site [Fire Water Storage Pond] is warranted." (p. 7-2)

During the fall of 1999, a Southeast Debris Burial Site was discovered on subject property south of the former Fire Water Storage Pond at the MSR. Lead and other metals were detected in soils, but at concentrations below action levels. This area was classified as Category 3 property. However, the 2001 *Final CERCLA Expanded Preliminary Assessment* (USASMDC, 2001) concluded that "… the Debris Landfill should be considered for no further action." (p. 7-4)

Based upon the visual inspection of MSR property and interviews with property and State individuals during the ECP process, the following additional areas have been classified:

- SPARTAN Missile Cells (Structures 501 through 530) (also called silos) contain groundwater that has infiltrated into the cells/silos. This water has been sampled and determined to contain chromium and other heavy metals. The SPARTAN missile cells/silos are therefore classified as Type 6.

- The Missile Site Control Building (MSCB) (Bldg 430) and the Missile Site Radar Power Plant (MSRPP) (Bldg 440) have flooded with groundwater. In the early 1990s water was pumped from these two buildings and treated for polychlorinated biphenyl (PCB) contamination prior to disposal. All PCB containing items were removed from the buildings at that time. A perimeter drain system was activated after the water was removed and keeps out the bulk of groundwater. However, water has continued to infiltrate and fill some of the bottom level pits of the buildings. The MSCB and the MSRPP are classified as Type 7.

- At the MSR site, there is an underground Heat Sink (Structure 423) that was designed to prevent overheating of electrical or environmental-control equipment in the MSCB and the MSRPP. It may have contained a mixture of water and ethylene glycol. The residual fluid in this tank has not yet been sampled to determine if it contains glycol. The Heat Sink tank at the MSR is classified as Type 6.

Figure ES-l presents the categorization of the MSR property.

According to the 2000 *Final Parcel-Specific EBS* (NMDJPO, 2000), all of the properties at RSL l, RSL 2, and RSL 4 are Category 1, except for the remote launch operations buildings (RLOBs), which are the underground nuclear-hardened bunkers at each of the RSLs. [Note: RSL-3 was not reviewed in this specific document as it was not under consideration as a potential location for the proposed X-Band Radar.] These areas were classified Category 3 property because of releases of water with contaminant concentrations below action levels to the wastewater lagoons. However, the 2001 *Final CERCLA Expanded Preliminary Assessment* (USASMDC, 2001) concluded that "… the RSL Lagoons [one at each of the four RSL sites] should be considered for no further action (Site Evaluation Accomplished)." (p. 7-5) The water that has infiltrated into the four Remote Launch Operations Buildings (RLOBs) may be classified as Type 3.

Based upon the visual inspection of MSR property during the ECP process, the following additional areas have been classified:

- At each RSL site, there are two underground Heat Sinks that were designed to prevent overheating of electrical or environmental-control equipment. One of the two tanks at each RSL used water and one used a water/glycol mix of fluid. Each heat sink that contained a water/glycol mix was estimated in 2005 to contain at least 200 gallons (at RSL 3) and no more than 6,000 gallons (at RSL 2) of a weak mixture of water and ethylene glycol. This mixture has been sampled at two of the four RSLs and all have been determined to contain varying levels of ethylene glycol. North Dakota State Health Department requires that this residual amount of glycol be removed prior to transfer/disposal of the property. All of the Heat Sink tanks at each of the RSL sites are classified as Type 6.

Figures ES-3, ES-4, and ES-5 present the categorization of RSLs 1, 2, 3, and 4, respectively.

At the MSR, adjacent property consists of agricultural areas with some wind turbines located to the north and east of the MSR property. There is no evidence that any of these agricultural properties present any threat to the subject properties. An evaluation of the environmental condition of property within a 0.25-mile radius of the subject properties was conducted in the adjacent property analysis. At the four RSL sites, all adjacent properties are privately owned land. This land is exclusively agricultural land, and presents no environmental threat to the subject properties. There are government-owned easements adjacent to the MSR and RSL site properties (approximately 199 acres at the MSR and 270 acres at each of the RSL sites) which have limited land use in a specified radius around the missile fields. These easements are still in place and discontinuance or transfer of the easements would be part of the property disposal process.

According to the 2000 *Final Parcel-Specific EBS* (NMDJPO, 2000), there were no constraints that would prevent the use of the MSR property and property at RSL sites 1, 2, and 4. (p. ES-2) However, analysis of the data currently available indicates there are a number of environmental constraints that would prevent some of the MSR property and RSL site properties from being used. Besides the Environmental Condition of Property Area Types mentioned previously, two other areas may require additional environmental attention.

- When the streets, gutters, and pavement were removed from the housing areas in the mid 1990s, the concrete material that was not used for rip-rap around the Waste Stabilization

Lagoon (Structure 385) as well as the asphalt was deposited in the north-center part of the Non-Tactical Area. The debris pile is uncovered and exposed to the elements. The asphalt debris is considered by the State of North Dakota Division of Waste Management to be classified as "inert debris."

- In the mid-1990s, it was determined that water from the sump in the basement of former Enlisted Mens' Dining Facility was overwhelming the wastewater disposal system. It was decided at that time to seal the sump and to demolish the building's first floor, push the debris into the former basement excavation, and regrade the surface.

The following caveats should be followed:

- Should building modifications be required, precautions should be taken with regard to lead-based paint and asbestos-containing material in existing facilities. Should removal of these materials be required, they should be removed and disposed in accordance with current regulations and guidelines.
- Should any excavation be conducted in the area of the former Enlisted Mens' Dining Facility, precautions should be taken about building debris buried at that site.

Findings of this ECP report were based on readily available, environmental information, interviews with site personnel, previous environmental studies, and federal and state database and file information related to the storage, release, treatment or disposal of hazardous substances or petroleum products. Findings were also based on visual observations from the time of the site visit and telephone and personal interviews with North Dakota state regulatory personnel.

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1 INTRODUCTION

The Stanley R. Mickelsen Safeguard Complex (SRMSC) is comprised of six noncontiguous real estate parcels: the Missile Site Radar (MSR) property, the Perimeter Acquisition Radar (PAR) property, and four geographically separate Remote SPRINT Launch (RSL) sites. All RSL sites are within 20 miles of the MSR property (see Appendix A, Figure 1-1). The PAR complex was transferred to the U.S. Air Force and is now Cavalier Air Force Station (AFS); therefore, the PAR property was not addressed in this ECP. The five remaining facilities are located at:

MSR:	Tactical and non-tactical areas make up the 432 acre site 102 miles northwest of the city of Grand Forks, North Dakota, and 12 miles south of Langdon and just north of Nekoma, Cavalier County, North Dakota
RSL No. 1:	This 41 acre site is 11 miles west-southwest of the MSR site and 3 miles east of the small community of Hampden, Ramsey County, North Dakota
RSL No. 2:	This 36 acre site is 18 miles north-northwest of the MSR site and 6 miles north-northwest of the town of Langdon, Cavalier County, North Dakota
RSL No. 3:	This 43 acre site is approximately 17 miles east of Langdon and near Olga, Cavalier County, North Dakota
RSL No. 4:	This 49 acre site is 9 miles south-southeast of the MSR site and 9 miles northwest of the small town of Adams, Walsh County, North Dakota

In support of the ECP, an onsite inspection of the five real estate parcels was conducted the week of 19-22 October 2009. The purpose of the inspection was to visually obtain information indicating the likelihood of recognized environmental conditions (RECs) in connection with the site.

1.1 PURPOSEOF ENVIRONMENTAL CONDITION OF PROPERTY (ECP)

The ECP was performed to collect reliable information regarding the environmental condition of the property to determine the property's suitability for out-grant or transfer, and to meet the requirements under Title 40, Code of Federal Regulations (CFRs), Part 373, § 373.1 (40 CFR 373.1), and U.S. Army Regulation (AR) 200-1, Environmental Protection and Enhancement. The information gathered during this assessment will also be used with the objective of assisting the U.S. Army (Army), the General Services Administration, and the purchaser in making informed business decisions about the transfer of the property by reducing uncertainty regarding its environmental condition.

The Army prepared this ECP for the following purposes:

- Provide the Army with information it may use to make disposal decisions;
- Provide the public with information relative to the environmental condition of the property;
- Assist Federal agencies during the property screening process;
- Provide information for prospective buyers;

- Assist prospective new owners in meeting the requirements under EPA's "All Appropriate Inquiry" regulations;
- Provide information about completed remedial and corrective actions at the property;
- Assist in determining appropriate responsibilities, asset valuation, and liabilities with other parties to a transaction.
- Provide information to satisfy legal requirements including:
    - o Notification requirements under §120(h)(1) and (3)(A)(i) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and state or local real property transfer requirements;
    - o Uncontaminated parcel identification requirements of Section 120(h)(4) of CERCLA; and
    - o State or local real property transfer requirements that are applicable to the federal government and the transaction.
- Provide a commercially acceptable level of environmental information necessary to facilitate the divestiture of the property.

The purpose as stated above does not include de minimis conditions that generally do not present a material risk of harm to the public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis are not addressed.

The ECP Report contains the information required to comply with the provisions of 40 CFR Part 373, which require that a notice accompany contracts for the sale of, and deeds entered into, for the transfer of federal property on which any hazardous substance was stored, released or disposed of. The CERCLA, Section 120(h) stipulates that a notice is required if certain quantities of designated hazardous substances have been stored on the property for one year or more - specifically, quantities exceeding 1,000 kilograms or the reportable quantity (RQ), whichever is greater, of the substances specified in 40 CFR 302.4 or one kilogram of acutely hazardous waste as defined in 40 CFR 261.30. A notice is also required if hazardous substances have been disposed of or released on the property in an amount greater than or equal to the reportable quantity. AR 200-1 requires that the ECP Report address asbestos, lead-based paint, radon and other substances potentially hazardous to human health.

This ECP Report used the American Society for Testing and Materials (ASTM) Designations D 6008-96 (2005), *Standard Practice for Conducting Environmental Baseline Surveys* and D5746-98 (2002), *Standard Classification of Environmental Condition of Property Area Types for Defense Base Closure and Realignment Facilities* as guidelines, along with CERCLA § 120, Army regulations and other applicable Army guidance.

Although many of the ECP development activities may be considered "due diligence" functions, the ECP report is not prepared to satisfy a real property purchaser's duty to conduct an "appropriate inquiry" to establish an "innocent purchaser defense" to CERCLA 107 liability. Any such use of the ECP by any party is outside the control of the United States Army and beyond the scope of the ECP. The United States Army, its officers, employees or contractors make no warranties or representations that any ECP report satisfies any such requirements for any party. Although this report was designed to eliminate the uncertainty regarding the potential for recognized

environmental conditions to the minimum practicable level, it does not eliminate the uncertainty altogether.

1.2 ECP CLASSIFICATION AND REPORT ORGANIZATION

This ECP report classifies the property into one of seven Standard Environmental Conditions of Property Types described in ASTM Designation D5746-98 (2002), *Standard Classification of Environmental Condition of Property Area Types for Defense Base Closure and Realignment Facilities.*

- *Standard Environmental Condition of Property Area Type 1* -- An area or parcel of real property where no release or disposal of hazardous substances or petroleum products or their derivatives has occurred (including no migration of these substances from adjacent properties).
- *Standard Environmental Condition of Property Area Type 2* -- An area or parcel of real property where only the release or disposal of petroleum products or their derivatives has occurred.
- *Standard Environmental Condition of Property Area Type 3* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.
- *Standard Environmental Condition of Property Area Type 4* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken.
- *Standard Environmental Condition of Property Area Type 5* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred and removal or remedial actions, or both, are under way, but all required actions have not yet been taken.
- *Standard Environmental Condition of Property Area Type 6* -- An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but required response actions have not yet been initiated.
- *Standard Environmental Condition of Property Area Type 7* -- An area or parcel of real property that is unevaluated or requires additional evaluation.

Chapter Two describes the site facilities. Chapter Three details the sites' history and previous environmental actions. Chapter Four lists the adjacent or adjoining properties and their impact on the sites. Chapter Five gives a review of regulatory information. Chapter Six recounts the site reconnaissance and review of hazards. Chapter Seven is a review of special sources. Chapter Eight details the conclusions that were made. Chapter Nine states limitations, Chapter Ten references, and Chapter Eleven staff qualifications.

Appendix A contains Figures, site maps, and aerial photographs. Appendix B contains Tables. Appendix C contains reference to Real Estate transactions, including warranty deeds for the property and chain of title information and chain of title information. Appendix D provides records of conversation and miscellaneous. Appendix E contains the Environmental Data Resources, Inc. (EDR) reports. Appendix F is a list of terms and acronyms used throughout the ECP. Appendix G provides site photographs from the 2009 Site Reconnaissance. Appendix H contains historical maps.

1.3 STANDARD OF CARE/RELIANCE

This ECP was performed in accordance with generally accepted practices of the environmental profession. ECP studies, such as the one performed at this site, are of limited scope, are noninvasive, and cannot eliminate the potential that hazardous, toxic, or petroleum substances are present or have been released at the site beyond what is identified by the limited scope of this ECP. No environmental condition of property can wholly eliminate uncertainty regarding the potential for environmental issues in connection with the property. Performance of the ASTM D 6008 survey standard is intended to reduce, but not eliminate, uncertainty regarding the potential for environmental issues. No warranties, express or implied, are intended or made. The limitations of this survey must be considered when the user of this report formulates opinions as to risks associated with the site or otherwise uses the report for any other purpose. This ECP report has been prepared for the exclusive, authorized, legal use and legal reliance of the Army Chief of Staff for Installation Management (ACSIM). Legal use or legal reliance by any other party is prohibited without the written authorization of the ACSIM and USACE-NWO.

2 SITE FACILITY DESCRIPTION

2.1 SITE LOCATION

The SRMSC is centered about the town of Nekoma, North Dakota. (USASSDC, 1994, p. 2-1) The areas around SRMSC are used primarily for agricultural purposes (USASSDC, 1994, p. 2-13) in the Cavalier, Ramsey, and Walsh Counties of North Dakota. Figure 1-1 in Appendix A provides a general Site location map.

Facility Name: Stanley R. Mickelsen Safeguard Complex

MSR: The site is 102 miles northwest of the city of Grand Forks, North Dakota, and 12 miles south of Langdon and just north of Nekoma, Cavalier County, North Dakota

RSL No. 1: The site is 11 miles west-southwest of the MSR site and 3 miles east of the small community of Hampden, Ramsey County, North Dakota

RSL No. 2: The site is 18 miles north-northwest of the MSR site and 6 miles north-northwest of the town of Langdon, Cavalier County, North Dakota

RSL No. 3: The site is approximately 17 miles east of Langdon and near Olga, Cavalier County, North Dakota

RSL No. 4: The site is 9 miles south-southeast of the MSR site and 9 miles northwest of the small town of Adams, Walsh County, North Dakota

Property Owner/Date of Ownership:

United States of America; Department of Army (March 1969-May 1979)
United States of America; Department of the Interior (May 1979-March 1985)
United States of America; Department of Army (March 1985-)

Zoning: (USASMDC, 2000)

MSR: Nekoma Township has no zoning ordinances; therefore, development in the area is reviewed by Cavalier County and the North Central Planning Council to ensure compliance with overall development guidelines. (p. 3-282)

RSL No. 1: Northfield Township has no zoning ordinances; therefore, development in the area is reviewed by Ramsey County and the North Central Planning Council to ensure compliance with overall development guidelines. (p. 3-285)

RSL No. 2: Langdon Township has zoning regulations for the town of Langdon and for areas outside the incorporated areas. These regulations deal with flood zones, building and tree setbacks, and agricultural uses. (p. 3-288)

RSL No. 3: South Olga Township has no zoning ordinances; therefore, development in the area is reviewed by Cavalier County and

the North Central Planning Council to ensure compliance with overall development guidelines.

RSL No. 4: Kinloss Township has no zoning ordinances; therefore, development in the area is reviewed by Walsh County and the Red River Regional Planning Council to ensure compliance with overall development guidelines. (p. 3-291)

County, State:	Cavalier, Ramsey, and Walsh Counties, North Dakota (USASSDC, 1995, p. 2-1)
USGS Quadrangle(s):	MSR: Nekoma and Billings Lake, North Dakota RSL-1: Alsen SE, North Dakota RSL-2: Langdon West, North Dakota RSL-3: Hanks Corner, North Dakota RSL-4: Fairdale and Edmore, North Dakota
Section/Township/Range:	MSR: T159N, R60W, Sections 14 and 15 RSL-1: T158N, R62W, Section 1 RSL-2: T162N, R60W, Sections 16, 17, 20, and 21 RSL-3: T161N, R57W, Section 14 RSL-4: T158N, R59W, Section 28
Latitude/Longitude: (USASMDC, 2001, p. 2-1)	MSR: 48°35’25" N; 98°21’43" W RSL-1: 48°31’59’ N; 98°34’55" W RSL-2: 48°50’57’ N; 98°25’52’ W RSL-3: 48°45’50’ N; 97°59’06’ W RSL-4: 48°28’29’ N; 98°15’18’ W
Legal Description:	MSR: (Appendix B, Table 2-1) RSL-1: (Appendix B, Table 2-2) RSL-2: (Appendix B, Table 2-3) RSL-3: (Appendix B, Table 2-4) RSL-4: (Appendix B, Table 2-5)

2.2 SITE PHYSICAL DESCRIPTIONS

The SRMSC is composed of five distinct property parcels: the Missile Site Radar (MSR) property situated on approximately four hundred thirty two acres of land and separated into two dissimilar areas: the Tactical Facilities (surrounded with green dashed line on Figure 2-1) and the Non-Tactical Support Facilities; and the four Remote SPRINT Launch (RSL) sites. Construction of the buildings/structures occurred from 1969-1972. Existing buildings/structures are addressed in the following paragraphs and Tables. Demolished or removed buildings are also identified in following Tables. Text was reproduced from the 1974 *Analysis of Existing Facilities* (USACE, 1975) with minor modification.

2.2.1 Missile Site Radar (MSR) Tactical Facilities

Table 2.2.1 Existing Buildings in the MSR Tactical Area

Facility Number	Facility
Building 401	Limited Area Sentry Station (LASS)
Structure 423	Heat Sink
Structure 424	Control Vault and Sump
Structure 425	Cathodic Protection Vault #1
Structure 426	Cathodic Protection Vault #2
Building 430	Missile Site Control Building (MSCB)
Building 435	Personnel, Equipment and Utility Tunnel (PEUT)
Building 440	MSR Power Plant (MSRPP): 70,000 gal Fuel Oil Storage Tank
Building 455	Warhead Handling Building (WHB)
Building 456	Universal Missile Building (UMB)
Building 460	Exclusion Area Sentry Station (EASS)
Structure 462	Electrical Distribution Vault (EDV)
Structure 463	Electrical Distribution Center East (EDC)
Structure 464	Electrical Distribution Center West (EDC)
Structure 465	Cathodic Protection Vault #3
Structure 470	Launch Area Utility Tunnel (LAUT)
Structure 471	Terminal Structure "A"
Structure 472	Terminal Structure "B"
Structures 501 thru 530	SPARTAN Cells/Silos 1 thru 30
Structures 541 thru 556	SPRINT Cells/Silos 1 thru 16

Note: Unless otherwise noted, excerpts for Table were obtained from reference USACE, 1975.

2.2.1.1 Building 401 Limited Access Sentry Station (LASS)

Building 401 is a Sentry Station for the control of access into the Limited Area, also known as the tactical area (HAER, 1996b, p. ND-9-A). The structure is a one-story building and was built in 1970-1973 and contains 3,431 square feet (sqft) of gross floor area. The floor is a slab on grade and covered with vinyl asbestos tile (VAT) in fifteen of the rooms, epoxy in four of the rooms and is exposed in three of the rooms. Exterior walls are concrete block. Interior walls are gypboard in eleven of the rooms, concrete block covered with gypboard in five of the rooms, concrete block

covered with insulated asbestos cement panels in four of the rooms, and one room with concrete block, gypboard and perforated hardboard. The ceiling is suspended acoustic tile in eleven of the rooms, suspended gypboard in five of the rooms, asbestos cement board in four of the rooms and exposed steel in two of the rooms. The roof is of metal decking on steel framing, rigid insulation and built-up roofing. The building has electric, gas, water and sewer utilities. Photographs of the exterior of this building are found in Appendix G, Photos 1 & 2. Figure 2-1 in Appendix A provides a layout location.

2.2.1.2 Structure 423 Heat Sink

Structure 423 is the Heat Sink, a nuclear-hardened concrete underground tank with exposed roof. It was designed to hold 7,866,087 gallons of fluid that would absorb the heat generated in the MSCB and the MSRPP. The roof of the Heat Sink on the MSR property is shown in Appendix G, Photo 3. The underground concrete tank is connected to the power plant by a 20 inch and a 24 inch line each approximately 312 feet long. The lines are enclosed in an 8 foot diameter corrugated steel pipe tunnel for 92 feet as they leave the heat sink, and for 94 feet as they enter the MSRPP. Figure 2-1 in Appendix A provides a layout location.

2.2.1.3 Structure 424 Control Vault and Sump

Structure 424 is a 170 sqft Control Vault and Sump. It is a two level, buried structure used for the removal of groundwater seepage into the MSCB and the MSRPP. The foundation is a concrete slab. The lower level of the structure is a sump for drainage from the MSCB, MSPP and the Heat Sink. The upper level is a pump room for pumping from the sump thru a six inch discharge line to a drainage field. In the pump room are two sump pumps, centrifugal type, with capacity of 600 gpm each. The structure has a small pre-engineered steel building on top. The structure has electric power. Figure 2-1 in Appendix A provides a layout location.

2.2.1.4 Structure 425 Cathodic Protection Vault #1

Structure 425 is an underground Cathodic Protection Vault with a gross floor area of 270 sqft designed to protect underground tanks and pipes. It is located near the power plant equipment access tunnel. The floor and roof are concrete slabs. The structure has electric utilities. Figure 2-1 in Appendix A provides a layout location.

2.2.1.5 Structure 426 Cathodic Protection Vault #2

Structure 426 is an underground Cathodic Protection Vault with a gross floor area of 200 sqft designed to protect underground tanks and pipes from corrosion. It is located between the heat sink and the electrical substation. The floor and roof are concrete slabs. The structure had electric utilities which are currently nonfunctional. Figure 2-1 in Appendix A provides a layout location.

2.2.1.6 Building 430 Missile Site Control Building (MSCB)

Building 430 is the Missile Site Control Building (MSCB) with a gross floor area of 136,295 sqft. It

was used for all tactical operation control functions associated with the surveillance, target acquisition, and missile guidance and control (HAER, 1996b, ND-9-B, p. 8). The MSCB is a five level, concrete, hardened, permanent construction with a four foot thick slab foundation. The lower two levels, with the mezzanine, are underground; and the upper three levels (the turret) are above ground. The MSCB had electric, water, gas, and sewer utilities and it is connected to the power plant through the Personnel and Equipment Utility Tunnel (PEUT). The entrance tunnel to the MSCB is shown in Appendix G, Photo 4, with corroded interior surfaces shown on Photos 5 & 6. Figure 2-1 in Appendix A provides a layout location.

a. The first floor consists of mechanical, electrical and communication equipment and storage areas; life support storage and area; transmitter cooling and control rooms; oil pumping room; elevator machine room; and other miscellaneous repair vestibules, storage, air locks, etc. First level finishes include: stairs, vestibules and the Maintenance Data System rooms have VAT flooring; five rooms have gypboard wall finish; three rooms with gypboard ceiling finish and one room with acoustical treatment. The first level stairs had VAT finish (HAER, 1996b, ND-9-B, p. 16).

b. The mezzanine consists of digital rack power supply room; technical supply management center; parts storage; and other miscellaneous storerooms. Mezzanine level finishes included: two rooms have VAT flooring and two rooms have VAT on removable panels; five rooms have gypboard wall finish; and the vestibule has gypboard ceiling treatment

c. The second floor consists of electronics areas; offices; computer rooms; mechanical and electrical equipment rooms; crypto room; data terminal room; and other miscellaneous repair, vestibule and service rooms. Second level finishes included: fifteen rooms have VAT on removable panels and twelve rooms have VAT flooring; thirty-seven rooms have gypboard wall finish and fourteen have acoustical wall treatment; and eleven rooms have gypboard ceilings and ten have acoustical ceiling treatment.

d. The third level consists of the removable third floor and duplexer area. Included on the third level are the antenna electronics room, telephone closet; mechanical equipment room, cable support area, corridor, and dup1exer area. Two rooms on the third level have VAT on removable panels.

e. The fourth floor consists of the four radiofrequency chambers and an antenna room. There is also an equipment platform level, and an access platform 1evel.

f. A contract to salvage the MSCB was awarded to an independent contractor shortly after the site was deactivated and the interior of the facility was left in very bad condition. Over the years the interior has continued to deteriorate and the only viable utility left inside the building is limited power for minimum lighting. There is no functional equipment remaining in this facility.

2.2.1.7 Building 435 Personnel, Equipment and Utility Tunnel (PEUT)

Building 435 is the Personnel and Equipment Utility Tunnel ((PEUT) constructed with a gross floor

area is 2,190 sqft as the connecting tunnel between the MSCB and the Missile Site Radar Power Plant (MSRPP) and is entirely underground with a built-up earth cover. Foundations are concrete footings and the floor at the lower level is a concrete slab on grade. The floor at the upper level is a suspended concrete slab. The structure had electric, gas, water and sewer utilities. In the sewage pump room, there were two sewage ejectors, vertical type with capacity of 150 gph; and two sump pumps, vertical type with capacity of 500 gpm. Utility systems in this structure are no longer viable. Figure 2-1 in Appendix A provides a layout location.

2.2.1.8 Building 440 Missile Site Radar Power Plant (MSRPP)

Building 440 is a three-level, underground Missile Site Radar Power Plant (MSRPP) constructed to provide electrical power to the MSCB with a gross floor area is 108,029 sq ft. The foundations consist of a concrete slab and the building had electric, water, gas and sewer utilities. Figure 2-1 in Appendix A provides a layout location.

a. The lower level consisted of six prime mover modules, and support rooms of: a corridor; motor generator room; weapons system storage; station service; examination and treatment room; and medical room. The lower level finishes include: four rooms with VAT flooring; four rooms with gypboard wall finish and two rooms with acoustical wall treatment; and eight rooms have acoustical ceiling plank, the corridor and the alert day room have acoustical 1ay-in ceiling panels, and the monitor room has suspended luminous ceiling.

b. The upper level consisted of a corridor, mezzanine 1 thru 6 over the six modules; electrical, mechanical and environmental equipment rooms; and a control room. The upper level finishes include: eleven rooms with VAT flooring; nineteen rooms have gypboard wall finish and two rooms have acoustical wall treatment; and twelve rooms have acoustical 1ay-in ceiling panels, seven rooms have acoustical ceiling plank; and the control room has suspended luminous ceiling.

c. There is an intermediate level consisting of the cable spreading room.

d. A contract to salvage the MSRPP was awarded to an independent contractor shortly after the site was deactivated and the interior of the facility was left in very bad condition. Over the years the interior has continued to deteriorate and the only viable utility left inside the building is limited power for minimum lighting. There is no functional equipment remaining in this facility.

2.2.1.9 Building 455 Universal Missile Building (UMB)

Building 455 is the one-story mounded ("bunker") structure (4,284 sqft gross area) Universal Missile Building constructed for initial preparation of missile sections, with space for unpacking, assembly, and checkout of SPARTAN and SPRINT missile components (HAER, 1996b, ND-9-C, p.1). Foundations are concrete footings and the floor is a 20" thick concrete slab. The floor in three of the rooms is covered with VAT; and the walls in three rooms are covered with gypboard. The explosive magazine area is constructed of corrugated steel arches with concrete floor and steel cover (Appendix G, Photo 8). The roof is concrete with a minimum earth cover of two feet (Appendix G, Photo 7). The building had electric, water and sewer utilities. Utility systems in this facility are no

longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.10 Building 456 Warhead Handling Building (WHB)

Building 456 is a one story, mounded ("bunker") structure (1,421 sqft gross floor area) Warhead Handling Building constructed to provide temporary storage for SPRINT warhead sections and space for checkout and temporary storage of SPARTAN warhead sections prior to their installation on the missiles (HAER, 1996b, ND-9-E, p. 1). Foundations are concrete footings and the floor in the building is a concrete floor slab. The walls ceilings and roof are concrete. The roof is covered with a minimum of two feet of earth. The building has water and electrical utilities. Utility systems in this facility are no longer functional and equipment has been removed. Photograph of the exterior and interior from the October 2009 Site Reconnaissance is shown in Appendix G, Photos 9 & 10. Figure 2-1 in Appendix A provides a layout location.

2.2.1.11 Building 460 Exclusion Area Sentry Station (EASS)

Building 460 is the one-story (399 sqft gross floor area) Exclusion Area Sentry Station (EASS) constructed to control access into the area where the Missile Launch Area and the Warhead Handling Building were located (HAER, 1996b, ND-9-D, p. 1). Foundations are concrete foundation walls and the floor is a concrete floor slab. The floor is covered with VAT in three of the rooms. Interior walls are covered with gypboard in four rooms. The ceiling is fiber acoustical insulation formboard. The building had electric, water and sewer utilities. Utility systems in this facility are no longer functional and equipment has been removed. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 11. Figure 2-1 in Appendix A provides a layout location.

2.2.1.12 Structure 462 Electrical Distribution Vault (EDV)

Structure 462 is the underground concrete vault (350 sqft gross floor area) Electrical Distribution Vault (EDV) constructed as a utility vault for the MSR SPARTAN and SPRINT missile fields. The foundation is a concrete slab and the floor, walls and roof are of concrete. The structure had electrical lighting and power. Utility systems in this facility are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.13 Structure 463 Electrical Distribution Center East (EDC)

Structure 463 is the underground concrete vault (1,120 sqft gross floor area) Electrical Distribution Center located on the east side of the launch area and was constructed as a utility vault for the MSR SPARTAN and SPRINT missile fields. The foundation is concrete slab and the concrete walls, floors and ceilings have liner plate covering. The floors also have epoxy paint covering. The structure had water and electrical utilities. Utility systems in this facility are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.14 Structure 464 Electrical Distribution Center West (EDC)

Structure 464 is the underground concrete vault (1,120 sqft gross floor area) Electrical Distribution Center located on the west side of the launch area and was constructed as a utility vault for the MSR SPARTAN and SPRINT missile fields. The foundation is a concrete slab and the concrete walls, floors and ceilings have liner plate covering. The floors also have epoxy paint covering. The structure had water and electrical utilities. Utility systems in this facility are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.15 Structure 465 Cathodic Protection Vault #3

Structure 465 the underground concrete vault (200 sqft gross floor area) Cathodic Protection Vault constructed at the missile field to protect ferrous metal pipes, conduits, etc from corrosion. Foundations are concrete footings and the floor and roof are concrete slabs with the roof slab exposed at grade. The walls are of concrete. The structure had electrical utilities. Utility systems in this facility are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.16 Structure 470 Launch Area Utility Tunnel (LAUT)

Structure 470 is the underground, 1,620 ft long (6,220 sqft gross floor area) Launch Area Utility Tunnel (LAUT) constructed to provide a conduit for power and utilities from the MSCB to the missile launch area. The foundation is compacted backfill and the floor is a concrete fill wall. The tunnel had electrical lighting and power. Utility systems in this facility are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.17 Structure 471 Terminal Structure "A"

Structure 471 is the underground concrete vault (360 sqft gross floor area) and is the east terminal of the LAUT constructed to provide access manholes to the LAUT. Foundations are concrete footings with a concrete sub-slab and the floor is liner plate over concrete with epoxy paint covering. The walls and ceiling slab are liner plate over concrete. The roof is a concrete slab. The structure had water and electrical utilities and there was a waste disposal system utilizing a sump pump, centrifugal type, with a capacity of 30 gpm. Utility systems in this structure are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.18 Structure 472 Terminal Structure "B"

Structure 472 is the underground concrete vault (360 sqft gross floor area) and is the west terminal of the LAUT constructed to provide access manholes to the LAUT. Foundations are concrete footings with a concrete sub-slab and the floor is liner plate over concrete with epoxy paint covering. The walls and ceiling slab are liner plate over concrete. The roof is a concrete slab. The structure had water and electrical utilities. Utility systems in this facility are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.19 Structures 501 thru 530 SPARTAN Cells/Silos 1 thru 30

Structures 501 thru 530 are the SPARTAN Cells/Silos. There are thirty cells/silos at the SPARTAN station and each cell/silo consists of a launch chamber; an exhaust duct; a launch preparation and equipment vault; a mechanical and electrical equipment vault; and an antenna. The cells/silos are hardened, concrete and steel, permanent construction; 76 feet deep and sloped north five degrees from vertical. The foundation is concrete with a sub-base slab. Each cell's/silo's interior is finished with liner plate. The cells/silos had electrical lighting and power. Utility systems in these structures are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

2.2.1.20 Structures 541 thru 556 SPRINT Cells/Silos 1 thru 16

Structures 541 thru 556 are the SPRINT Cells/Silos. There are sixteen each of the cells/silos each consisting of a launch cell; a launch preparation equipment chamber; a concrete apron at grade; and an antenna. The cells/silos are concrete and steel and each launch cell/silo is installed vertically with a concrete slab foundation buried 32 feet below grade. The cell/silo diameter is approximately 9.5 ft and is of fabricated steel construction. The cells/silos had electrical lighting and power. Utility systems in these structures are no longer functional and equipment has been removed. Figure 2-1 in Appendix A provides a layout location.

When operational, each cell/silo contained a SPRINT missile that would be launched by a explosive-charge driven, gas-propelled piston through its cell cover, which would be explosively fragmented to allow the missiles exit (HAER, 1996b, ND-9-F, p, 1). Steering the SPRINT toward its target was accomplished by a thrust vector control system where Freon® was injected into the booster exhaust nozzle. (USASMDC, 1999, p. 3-16; USABMDSC, 1975, p. 9-5)

2.2.1.21 Removed/Demolished Buildings of MSR Tactical Facilities

Table 2.2.1.21 Tactical Structures Removed/Demolished at the MSR

Facility Number	**Facility**	**Reference** (A, B, C, D)
Structure 403	12,000 gal Fuel Oil Holding Tank – North	A, B
Structure 404	12,000 gal Fuel Oil Holding Tank – South	A, B
Building 405	Fuel Oil Building	C
Structure 406	Fuel Oil Storage Tank No. 1	A
Structure 407	Fuel Oil Storage Tank No. 2	A

Facility Number	Facility	Reference (A, B, C, D)
Structure 410	Cooling Tower	A
Structure 415	Test Tower No. 1	A
Building 416	Terminal House No. 1	A
Structure 417	Test Tower No. 2	A
Building 418	Terminal House No. 2	A
Structure 420	Water Storage Reservoir, Open (Photo 12)	C
Structure 450	Electrical Substation (Photo 13)	D
Building 445	Hardened Fuel Oil Storage Tank	D

(A) Handwritten note in *Analysis of Existing Facilities at Stanley R. Mickelsen Safeguard Complex in Vicinity of Grand Forks. North Dakot*a, 1975 (USACE, 1975)
(B) *Underground Storage Tank Closure Report*, EPIC Company, Inc., 1991
(C) Greenwood, 2009. Personal Communication. 4 September 2009
(D) Interview with Mr. Greenwood during Site Reconnaissance, October 2009

2.2.2 Existing Missile Site Radar (MSR) Non-Tactical Support Facilities

Table 2.2.2 Existing Non-Tactical Support Facilities at the MSR

Facility Number	Facility
Building No. 340	Chapel (Chapel Annex demolished (B))
Building No. 346	Gymnasium
Building No. 350	Community Center
Building No. 360	Administration Building
Building No. 364	Industrial Building
Building No. 369	Potable Water Pump House
Structure No. 370	Potable Water Storage Reservoir, Enclosed
Structure No. 37l	Telephone Building
Structure No. 384	Chlorine Contact Chamber and Pump House
Structure No. 385	Waste Stabilization Ponds

(B) *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9)*, 1996 (HAER, 1996)

2.2.2.1 Building 340 Chapel

Building 340 is a one story, 150-seat Chapel (8,378 sqft gross floor area). Foundations consist of concrete footings. The floor is a concrete slab. Seventeen of the rooms are covered with VAT. The ceiling is suspended gypboard in nine of the rooms and suspended acoustic tile in ten rooms. The roof on parts of the Chapel consists of steel joists, steel decking, rigid insulation and built-up roofing. The roof over the chancel, nave, narthex and vestibule consists of a laminated wood decking, rigid insulation, 1½ inch wooden strips, ½ inch exterior plywood, 15# asbestos asphalt felt and cement asbestos shingles. The building has electric, gas, water and sewer utilities which are not currently in use. Some equipment has been removed from this facility. The Annex trailer for Building 340 (Trailer T-341) was removed in 1991. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 14. Figure 2-1 in Appendix A provides a layout location.

2.2.2.2 Building 346 Gymnasium

Building 346 is a pre-engineered steel, single story Gymnasium (11,544 sqft gross floor area). Foundation is concrete footings. The floor is a concrete slab. Seven of the rooms are covered with VAT floor. The interior walls are mostly concrete (concrete masonry unit [CMU]) but two rooms have gypboard. Eight of the rooms have suspended acoustic tile ceilings and ten have suspended gypboard. The roof is metal with blanket insulation and purlins. The facility has functional utility systems. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 15. Figure 2-1 in Appendix A provides a layout location.

2.2.2.3 Building 350 Community Center

Building 350 is the single story Community Center which includes one mezzanine level for a library (33.620 sqft gross floor area). Among the services provided in the Community Center were: TV repair, beauty shop, barber shop, crafts shop, ceramics room, photography, and snack bar, and projection booth. Foundations consist of concrete footings. The first floor has a concrete floor slab. Thirty-three of the rooms are covered with VAT. All walls are CMU and six are covered with gypboard. The ceiling is suspended gypboard in 40 of the rooms and suspended acoustical tile in five of the rooms. The mezzanine level is a concrete slab on galvanized corrugated steel decking. Floors are covered with VAT. Ceiling is suspended acoustical tile. The roof consists of steel joists, steel decking, rigid insulation and built-up roofing. The building has electric, gas, water and sewer utilities which have been mostly unused for over 20 years. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 16. Figure 2-1 in Appendix A provides a layout location.

2.2.2.4 Building 360 Administration Building

Building 360 was the two-story (with full basement) Administrative Building (17,568 sqft gross floor area) used by the Army as a Headquarters Building. Foundations are concrete footings. The basement has a concrete floor slab and eight of the rooms are covered with VAT. The interior basement walls are gypsum board with batt insulation. The ceiling is a mixture of suspended acoustic tile and gypsum board. The first floor has a concrete floor slab and eighteen of the rooms

are covered with VAT. The interior walls are a mixture of CMU and gypsum board. The ceiling is gypsum board with the exception of the arms storage room, mechanical room and detention cell, which have exposed concrete. The second floor has a concrete floor slab and eighteen of the rooms are covered with VAT. The interior walls are mostly gypsum board with some CMU. The ceiling is gypsum board. The roof is gable type with steel truss, steel decking, rigid insulation and built-up roofing. The building has electric, gas, water and sewer utilities but the utilities have been mostly unused for over 20 years. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 17. Figure 2-1 in Appendix A provides a layout location.

2.2.2.5 Building 364 Industrial Building

Building 364 is the single story, pre-engineered steel Industrial Building (34,433 sqft gross floor area) constructed for vehicle service and maintenance, logistical support, a fire department, and offices. Foundations are concrete footings. The floor consists of a floor slab and eight of the rooms are covered with VAT. Seventeen of the rooms have suspended gypboard ceilings. The roof has a steel truss, batten-type insulation and standing seam steel roof. The building has electric, gas, water and sewer utilities. About 85% of the building space has been unheated for over 20 years. Water and sewer have been unused for over 20 years. A photograph of the building's exterior and its interior flooring from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 18 & 19. Figure 2-1 in Appendix A provides a layout location.

According to the 2001 *FINAL Comprehensive Environmental Response, Compensation, and Liability Act; Expanded Site Inspection*, construction debris was identified in an "unpermitted landfill" approximately 1,600 feet north of Bldg 364. (USASMDC, 2001, p. 2-20) The same source identified a wash rack behind Bldg 364 and its catch basin connected to storm sewers that eventually discharged to grade and eventually left site, in most instances via Roaring Nancy Creek. (USASMDC, 2001, p. 2-16) A photo of the aforementioned wash rack and storm water ditch can be seen in Photo 20.

2.2.2.6 Building 369 Pump House

Building 369 is the one story Pumphouse (1,968 sqft gross area) to supply potable water from the well field to the MSR site. Foundation is concrete slab. There is a pump pit with sump, the floor and walls of the pit are concrete. Floors in other areas are concrete or grating with structural framing. Walls are CMU. The ceiling is exposed. The roof consists of steel joists, steel decking, rigid insulation and built-up roofing. The building has electric, gas and water utilities. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 21. Figure 2-1 in Appendix A provides a layout location.

2.2.2.7 Structure 370 Water Storage Reservoir, Enclosed

Structure 370 is a 400,000 gallon enclosed potable water storage reservoir. The foundation is a concrete footing ring, 2 foot high and 4 foot wide, under the concrete wall. The floor is a concrete slab on compacted fill. The roof is a concrete slab with four concrete column supports. The tank is 23½ foot high with 5 feet being below grade. The tank is mounted over with 1½ foot of earth fill and the side slopes recede at a 3 on 1 slope. Figure 2-1 in Appendix A provides a layout location.

2.2.2.8 Structure 37l Polar (Telephone) Building

Building 371 is a one story, 5090 square foot, prefabricated metal building constructed by the Polar Telephone Company as a telephone exchange facility. This facility is currently used by the property caretaker contractor and is fully functional with electric, water, gas, and sewage utility services. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 22. Figure 2-1 in Appendix A provides a layout location.

2.2.2.9 Structure 384 Chlorine Contact Chamber and Pump House

Structure 384 is the two-level, concrete Chlorine Contact Chamber (70,000 gallon capacity) and Pump House (484 sqft gross floor area) of the Spray Irrigation System, constructed for wastewater treatment and aeration. The upper level pump house is aboveground, and the lower level chlorine chamber is underground. The upper level includes a chlorine room. The foundation is a concrete slab. The upper level floor is concrete with hardener-sealer. Exterior walls are concrete and the interior walls of the chlorine room are of concrete masonry units. The roof is a suspended concrete slab, and the ceiling is of exposed concrete. The interior finish of the chlorine chamber is exposed concrete. The structure has electric and water utilities but they have been unused for over 20 years. Some equipment is removed from this facility. A photograph of the area from the October 2009 Site Reconnaissance is shown in Appendix G, Photo 23, with Structure 384 at the left center. Figure 2-1 in Appendix A provides a layout location.

2.2.2.10 Structure No. 385 Waste Stabilization Ponds

Structure 385 is the 914,000 sqft (total capacity of 34,183,000 gallons) Waste Stabilization Ponds including the MSRPP waste water storage pond, the fire water storage pond, and the MSCB fire water storage pond. This structure was constructed to collect and treat wastewater from the MSR site. The retaining dikes of the ponds are constructed of compacted backfill. Some erosion of the dikes has occurred and riprap has been added within the last 15 years. The lagoon is currently in use but only at a small fraction of its capacity. Figure 2-1 in Appendix A provides a layout location.

According to the 2001 *FINAL Comprehensive Environmental Response, Compensation, and Liability Act; Expanded Site Inspection*, the 1975 *USAEHA Water Quality Engineering Study* noted a 6-inch layer of what appeared to be diesel fuel floating on the surface of the Fire Water Storage Pond, that the ground area around the perimeter of the pond for approximately 10 feet was saturated with the oil to a depth of 2 to 6 inches, and waste oil could also contained chlorinated and non-chlorinated solvents, Freon™, PCBs, and heavy metals. (USASMDC, 2001, p. 2-13). No further remedial action is planned.

A photograph of the area from the October 2009 Site Reconnaissance showing water in the lagoon is in Appendix G, Photo 23. No diesel fuel or other substance was reported to be on the surface of the water or the surrounding area.

2.2.2.11 Water Distribution Piping

Potable water from the off-site well-field was collected in the enclosed water storage reservoir (Structure 570) and pumped to the Non-Tactical facilities. Water distribution from the reservoir and pumping station to Support Area facilities includes: 50 linear feet of 10 inch asbestos cement pipe and 10 linear feet of 4 inch asbestos cement pipe. (USACE, 1975, pp. 98-99)

2.2.2.12 Removed/Demolished Non-Tactical Facilities at the MSR

Table 2.2.2.12 Non-Tactical Facilities Removed/Demolished at the MSR

Facility Number	Facility	Reference (A, B, C)
Building No. S30l	Installation Headquarters Building; One 1,000 gal fuel oil tank	C; B
Building No. T302	Visitor Control Center	A
Building No. S303	Test Lab	C
Building No. S304	Installation Headquarters Annex	C
Building No. T305	Installation Headquarters Trailer	A
Building No. 306	Army Exchange Service Station (Photo 24) Three 9,000 gal gas USTs were removed in the 1990s	B; C
Building No. S345	Dispensary	C
Building No. S348	Enlisted Men's Complex & Dining Hall (Photos 25 & 26)	C
Building No. S355	Officer's Complex	C
Building No. 358	Controlled Area Sentry Station	A
Building No. T365	Fireman's Quarters	A
Building No. T366	WECo Trailer Complex, Main Bldg	A
Building No. T367	WECo Trailer Complex, Secondary Bldg	A
Building No. T368	WECo Trailer Complex, Third Bldg	C
Structure No. 379	Dispensing Station, Vehicle Fuel with Tanks 377 & 378	A, B, C

(A) Handwritten note in *Analysis of Existing Facilities at Stanley R. Mickelsen Safeguard Complex in Vicinity of Grand Forks. North Dakot*a, 1975 (USACE, 1975)

(B) *Underground Storage Tank Closure Report*, EPIC Company, Inc., 1991

(C) Greenwood, 2009. Personal Communication. 4 September 2009

Table 2.2.2.13 MSR Family Housing Facilities Removed Buildings

Facility Number	Facility	Reference (A, B, C, D)
Buildings 27-88	Family Housing (Photo 27)	B

(A) Handwritten note in *Analysis of Existing Facilities at Stanley R. Mickelsen Safeguard Complex in Vicinity of Grand Forks. North Dakot*a, 1975 (USACE, 1975)

(B) *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9),* 1996 (HAER, 1996)

(C) NMDJPO, 2000, pp. 17-19

(D) Greenwood, 2009. Personal Communication. 4 September 2009

2.2.3 Remote SPRINT Launch (RSL) Site 1

Table 2.2.3 Existing Structures at RSL-1

Facility Number	Facility
Building 1101	Limited Area Sentry Station (LASS)
Building 1110	Remote Launch Operations Building (RLOB)
Structure 1120	Heat Sinks West
Structure 1121	Heat Sink, North
Structure 1130 and 1131	Potable Water Storage Tanks, A and B
Structure 1135	Waste Stabilization Lagoon
Structures 501 thru 1512	Sprint Launch Silos/Cells thru 12

2.2.3.1 Building 1101 Limited Area Sentry Station

Building 1101 was the one story, permanent (2,259 sqft gross floor area) Limited Area Sentry Station (LASS) constructed to control entrance into the Remote SPRINT Launch (RSL) Site No. 1. Walls are reinforced concrete. Foundations are concrete footings and the floor is a slab on grade. Floor covering is VAT in nine rooms.

The interior walls in eight of the rooms were gypboard. The ceiling finish in ten rooms is acoustical tile. The roof is a suspended concrete slab, with elastomeric roofing. The building had electric, water and sewer utilities. Utility systems have been unused for over 20 years and some equipment is removed. Many of the original security fences and exterior lighting is removed.

A photograph of the area from the October 2009 Site Reconnaissance showing the gate and the LASS for RSL 1 is in Appendix G, Photo 28. Figure 2-2 in Appendix A provides a layout location.

2.2.3.2 Building 1110 Remote Launch Operations Building (RLOB)

According to the *Historic American Engineering Record*, Volume 2, Building 1110 was the one story, earth-covered (11,956 sqft gross floor area) Remote Launch Operations Building (RLOB) constructed to support SPRINT missile operations and to house personnel working at RSL No. 1. (HAER, 1996b, ND-9-V, pp. 5-9) Foundations are reinforced concrete slab and the floor is a slab on grade. The facility was designed for nuclear hardness and had electromagnetic pulse (EMP) protection. Five rooms have VAT finish, one room had VAT on shock-isolated platforms and one room had VAT on removable panels. The interior walls in two of the rooms have acoustical treatment. The ceiling finish in seven rooms is acoustical lay-in panel. The roof is a suspended concrete slab. The building had electric, water and sewer utilities. Most equipment is removed from the facility and some interior flooding with groundwater has occurred. Utility systems are nonfunctional. A photograph of the area from the October 2009 Site Reconnaissance showing the entrance to the RLOB for RSL 1 is in Appendix G, Photo 29 and the interior of the tunnel is shown in Photo 30. Figure 2-2 in Appendix A provides a layout location.

Lighting ballasts containing small amounts of PCBs were removed from the RSL site from June through November 1991. (HAER, 1996b, ND-9-V, pp. 4-10)

2.2.3.3 Structure 1120 Heat Sink, West

Structure 1120 is an 83,000 gallon underground concrete Heat Sink tank for providing cooling liquid (a water / ethylene glycol blend) for equipment in the RLOB. The roofs are supported by a row of concrete columns. North Dakota State regulators require a small amount of a weak glycol and water mix to be removed prior to property transfer/disposal. A photograph of the area from the October 2009 Site Reconnaissance showing the heat sink vent pipes for RSL 1 is in Appendix G, Photo 31. Figure 2-2 in Appendix A provides a layout location.

2.2.3.4 Structure 1121 Heat Sink, North

Structure 1121 is an 83,000 gallon underground concrete Heat Sink tank to provide cooling water for equipment in the RLOB. The roofs are supported by a row of concrete columns. Figure 2-2 in Appendix A provides a layout location.

2.2.3.5 Structures 1130 and 1131 Potable Water Storage Tanks A and B

Structures 1130 and 1131 are two steel Underground Storage Tanks (USTs) installed to contain potable water for the RSL 1 site. Foundations are concrete slabs. Figure 2-2 in Appendix A provides a layout location.

2.2.3.6 Structure 1135 Waste Stabilization Lagoon

Structure 1135 consists of Primary and Secondary cells of the Waste Stabilization Lagoon which is located on the east edge of the RSL 1 site. This structure was constructed to collect and treat wastewater from the RSL 1 site. The retaining dikes of the lagoon are constructed of compacted backfill. Figure 2-2 in Appendix A provides a layout location.

2.2.3.7 Structure 1501 thru 1512 SPRINT Launch Cells/Silos 1 thru 12

Structures 1501 thru 1512 are the SPRINT Launch cells/silos #1 through #12. For Description, see Section 2.3.1.33

2.3.3.8. Removed/Demolished Structures at RSL-1

Table 2.3.3.9 RSL-1 Removed/Demolished Structures

Facility Number	Facility	Reference (A, B, C, D)
Building 1115	Exclusive Area Sentry Station (EASS)	D
Structure 1125	Fuel Oil Tank (27,500 gallons) (Photo 32)	C
No number given	Heating Oil Tank (500 gallons) (Photo 32)	C

(A) Handwritten note in *Analysis of Existing Facilities at Stanley R. Mickelsen Safeguard Complex in Vicinity of Grand Forks. North Dakot*a, 1975 (USACE, 1975)

(B) *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9)*, 1996 (HAER, 1996)

(C) NMDJPO, 2000, pp. 17-19

(D) Greenwood, 2009. Personal Communication. 4 September 2009

2.2.4 Remote SPRINT Launch Site 2

Table 2.2.4 Existing Structures at RSL-2

Facility Number	Facility
Building 2101	Limited Area Sentry Station (LASS)
Building 2110	Remote Launch Operations Building (RLOB)
Structure 2120	Heat Sink, South
Structure 2121	Heat Sink, West
Structure 2130 and 2131	Potable Water Storage Tanks, A and B
Structure 2135	Waste Stabilization Lagoon
Structures 2501 thru 2512	Sprint Launch Silos/Cells 1 thru 12

2.2.4.1 Building 2101 Limited Area Sentry Station (LASS)

Building 2101 was the one story, permanent (2,259 sqft gross floor area) LASS constructed to control the sally-port gates that permitted entrance into the RSL Site No. 2. Foundations are concrete footings and the floor is a slab on grade. The building's exterior walls are reinforced concrete designed for nuclear hardness. Floor covering is VAT in nine rooms.

The interior walls in eight of the rooms were gypboard. The ceiling finish in ten rooms is acoustical tile. The roof is a suspended concrete slab, with elastomeric roofing. The building had electric, water and sewer utilities but utilities have not been used for over 20 years. Equipment is removed from the facility. A photograph of the area from the October 2009 Site Reconnaissance showing the gate and the LASS for RSL 2 is in Appendix G, Photo 33. Figure 2-3 in Appendix A provides a layout location.

2.2.4.2 Building 2110 Remote Launch Operations Building (RLOB)

According to the *Historic American Engineering Record*, Volume 2, Building 2110 was the one story, earth-covered (11,956 sqft gross floor area) RLOB constructed to support SPRINT missile operations and to house personnel working at RSL No. 2. (HAER, 1996b, ND-9-Z, pp. 5-9) Foundations are reinforced concrete slab and the floor is a slab on grade. Exterior walls and roof are reinforced concrete constructed for nuclear hardness. Five rooms have VAT floor finish, one room had VAT on shock-isolated platforms and one room had VAT on removable panels. The interior walls in two of the rooms have acoustical treatment. The ceiling finish in seven rooms is acoustical lay-in panel. The roof is a suspended concrete slab. The building had electric, water and sewer utilities but utilities have not been used for over 20 years. Equipment is removed from the facility. A photograph of the area from the October 2009 Site Reconnaissance showing the entrance to the RLOB for RSL 2 is in Appendix G, Photo 34 and the interior picture of the sealed sump pump is shown in Photo 35. Figure 2-3 in Appendix A provides a layout location.

Lighting ballasts containing small amounts of PCBs were removed from the RSL site from June through November 1991. (HAER, 1996b, ND-9-V, p. 4)

2.2.4.3 Structure 2120 Heat Sink, South

Structure 2120 is an 83,000 gallon underground concrete Heat Sink tank constructed to provide water to cool the RLOB equipment. The roof is supported by a row of concrete columns. A photograph of the area from the October 2009 Site Reconnaissance showing the heat sink vent pipes for RSL 2 is in Appendix G, Photo 36. Figure 2-3 in Appendix A provides a layout location.

2.2.4.4 Structure 2121 Heat Sink, West

Structure 2121 is an 83,000 gallon underground concrete Heat Sink tank constructed to provide liquid (a water / ethylene glycol blend) to cool RLOB equipment. The roofs are supported by a row of concrete columns. North Dakota State regulators require a small amount of a weak glycol and water mix to be removed prior to property transfer/disposal. Figure 2-3 in Appendix A provides a layout location.

2.2.4.5 Structures 2130 and 2131 Potable Water Storage Tanks, A and B

Structure 2130 and 2131 are two steel USTs installed to contain potable water for the RSL 2 site. Foundations are concrete slabs. Figure 2-3 in Appendix A provides a layout location.

2.2.4.6 Structure 2135 Waste Stabilization Pond

Structure 2135 consists of Primary and Secondary cells of the Waste Stabilization Lagoon which is located on the east edge of the RSL 2 site. This structure was constructed to collect wastewater from the RSL 2 site. The retaining dikes of the lagoon are constructed of compacted backfill. A photograph of the area from the October 2009 Site Reconnaissance showing the RSL 2 Waste Stabilization Lagoon is in Appendix G, Photo 37. Figure 2-3 in Appendix A provides a layout location.

2.2.4.7 Structure 2501 thru 2512 SPRINT Launch Cells/Silos 1 thru 12

Structures 2501 thru 2512 are the SPRINT Launch cells/silos 1 through 12. A photograph of the area from the October 2009 Site Reconnaissance showing the heat sink vent pipes for RSL 2 is in Appendix G, Photo 38. For Description, see Section 2.3.1.33.

2.2.4.8 Removed/Demolished Structures at RSL-2

Table 2.2.4.8 RSL-2 Removed/Demolished Structures

Facility Number	Facility	Reference (A, B, C, D)
Building 2115	Exclusion Area Sentry Station (EASS)	D
Structure 2125	Fuel Oil Tank (27,500 gallons) (Photo 39)	C
No number given	Heating Oil Tank (500 gallons) (Photo 39)	C

(A) Handwritten note in *Analysis of Existing Facilities at Stanley R. Mickelsen Safeguard Complex in Vicinity of Grand Forks. North Dakot*a, 1975 (USACE, 1975)

(B) *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9)*, 1996 (HAER, 1996)

(C) NMDJPO, 2000, pp. 17-19

(D) Greenwood, 2009. Personal Communication. 4 September 2009

2.2.5 Remote SPRINT Launch (RSL) Site 3

Table 2.2.5 RSL-3 Existing Structures

Facility Number	Facility
Building 3101	Limited Area Sentry Station (LASS)
Building 3110	Remote Launch Operations Building (RLOB)
Building 3115	Exclusion Area Sentry Station (EASS)
Structure 3120	Heat Sink, West
Structure 3121	Heat Sink, South
Structure 3130	Potable Water Storage Tank

Facility Number	Facility
Structure 3135	Waste Stabilization Lagoon
Structures 3501 thru 2516	Sprint Launch Cells/Silos 1 thru 16

2.2.5.1 Building 3101 Limited Area Sentry Station (LASS)

Building 3101 is a one story, permanent (2,258 sqft gross floor area) LASS constructed to control entrance to RSL Site No. 3. Foundations are concrete footings and the floor is a slab on grade. The exterior structure is reinforced concrete designed for nuclear shock hardness. Floor covering was VAT in nine rooms.

The interior walls in eight of the rooms were gypboard. The ceiling finish in ten rooms was acoustical tile. The roof is a suspended concrete slab, with elastomeric roofing. The building had electric, water and sewer utilities but utilities have not been used for over 20 years. Equipment is removed from the facility. A photograph of the area from the October 2009 Site Reconnaissance showing the gate, the LASS, and the RLOB ventilation shaft for RSL 3 is in Appendix G, Photo 40. Picture 41 in Appendix A shows the interior of one of the rooms in the LASS. Figure 2-4 in Appendix A provides a layout location.

2.2.5.2 Building 3110 Remote Launch Operations Building (RLOB)

According to the *Historic American Engineering Record*, Volume 2, Building 3110 was the one story, earth-covered (11,956 sqft gross floor area) RLOB constructed to support SPRINT missile operations and to house personnel working at RSL No. 3. (HAER, 1996b, ND-9-AD, pp. 5-9) Foundations are reinforced concrete slab and the floor is a slab on grade. Exterior walls and the roof are constructed for nuclear shock hardness. Five rooms have VAT finish, one room had VAT on shock-isolated platforms and one room had VAT on removable panels. The interior walls in two of the rooms have acoustical treatment. The ceiling finish in seven rooms is acoustical lay-in panel. The roof is a suspended concrete slab. The building had electric, water and sewer utilities but utilities have been unused for over 20 years. Minimum electric power has been maintained in this facility for dewatering pumps to minimize groundwater accumulation. Most equipment is removed from the facility and some interior flooding with groundwater has occurred. Utility systems are nonfunctional. Photographs of the area from the October 2009 Site Reconnaissance showing the entrance to the RLOB as well as interior photographs are in Appendix G, Photos 42 through 46. Figure 2-4 in Appendix A provides a layout location.

Lighting ballasts containing small amounts of PCBs were removed from the RSL site from June through November 1991. (HAER, 1996b, ND-9-V, p. 4)

2.2.5.3 Building 3115 Exclusion Area Sentry Station

According to the *Historic American Engineering Record*, Volume II, Building 3115 was the one-man (35 sqft gross floor area) EASS constructed to control ingress/egress of the RSL Site No. 3 Exclusion Area. (HAER, 1996b, vol. 2, ND-9-AE, p. 1) Foundation is concrete slab and the floor is

a slab on grade. Walls and roof are reinforced concrete designed for nuclear shock hardness. The roof has elastomeric roofing. The building had electric utilities and power. (HAER, 1996b, ND-9-W) Equipment is removed from the facility. Utility systems are nonfunctional. Figure 2-4 in Appendix A provides a layout location.

2.2.5.4 Structure 3120 Heat Sink, West

Structure 3120 is an 83,000 gallon underground concrete Heat Sink tank constructed to provide water to cool equipment in the RLOB. Foundations are concrete slabs. The roofs are supported by a row of concrete columns. Photograph of the area from the October 2009 Site Reconnaissance showing the location for the heat sink is in Appendix G, Photos 47. Figure 2-4 in Appendix A provides a layout location.

2.2.5.5 Structure 3121 Heat Sink, South

Structure 3121 is an 83,000 gallon underground concrete Heat Sink tank constructed to provide cooling liquid (a water / ethylene glycol blend) for the RLOB equipment. Foundations are concrete slabs. The roofs are supported by a row of concrete columns. North Dakota State regulators require a small amount of a weak glycol and water mix to be removed prior to property transfer/disposal. Figure 2-4 in Appendix A provides a layout location.

2.2.5.6 Structure 3130 Potable Water Storage Tank

Structure 3130 consists of one steel UST installed to contain potable water for the RSL 3 site. Foundation is a concrete slab. Figure 2-4 in Appendix A provides a layout location.

2.2.5.7 Structure 3135 Waste Stabilization Lagoon

Structure 2135 consists of Primary and Secondary cells of the Waste Stabilization Lagoon which is located on the east edge of the RSL 3 site. This structure was constructed to collect wastewater from the RSL 3 site. The retaining dikes of the lagoon are constructed of compacted backfill. Photograph of the area from the October 2009 Site Reconnaissance showing the Waste Stabilization Lagoon is in Appendix G, Photos 48. Figure 2-3 in Appendix A provides a layout location.

2.2.5.8 Structure 3501 thru 3516 SPRINT Launch Silos/Cells 1 thru 16

Structures 3501 thru 3516 are the SPRINT Launch silos/cells 1 through 16. For Description, see Section 2.3.1.33

2.2.5.9 Removed/Demolished Structures at RSL-3

Table 2.2.5.9 RSL-3 Removed/Demolished Structures

Facility Number	Facility	Reference (A, B, C, D)
Structure 3125	Fuel Oil Tank (27,500 gallons) (Photo 49)	C
No number given	Heating Oil Tank (500 gallons) (Photo 49)	C

(A) Handwritten note in *Analysis of Existing Facilities at Stanley R. Mickelsen Safeguard Complex in Vicinity of Grand Forks. North Dakot*a, 1975 (USACE, 1975)

(B) *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9)*, 1996 (HAER, 1996)

(C) NMDJPO, 2000, pp. 17-19

(D) Greenwood, 2009. Personal Communication. 4 September 2009

2.2.6 Remote SPRINT Launch Site 4

Table 2.2.6 RSL-4 Existing Structures

Facility Number	Facility
Building 4101	Limited Area Sentry Station (LASS)
Building 4110	Remote Launch Operations Building (RLOB)
Structure 4120	Heat Sink, South
Structure 4121	Heat Sink, East
Structure 4130 and 4131	Potable Water Storage Tanks, A and B
Structure 4135	Waste Stabilization Lagoon
Structures 4501 thru 4514	Sprint Launch Silos/Cells 1 thru 14

2.2.6.1 Building 4101 Limited Area Sentry Station (LASS)

Building 4101 was the one story, permanent (2,259 sqft gross floor area) LASS constructed to control entrance into the RSL Site No. 4. Foundations are concrete footings and the floor is a slab on grade. Exterior walls and the roof are reinforced concrete designed for nuclear shock hardness. Floor covering is VAT in nine rooms.

The interior walls in eight of the rooms were gypboard. The ceiling finish in ten rooms is acoustical tile. The roof has an elastomeric coating. The building had electric, water and sewer utilities. Most equipment is removed and utilities have been unused for over 20 years. Photograph of the area from the October 2009 Site Reconnaissance showing the RSL 4 with the LASS to the left and the RLOB ventilation shaft in the center is in Appendix G, Photo 50. Picture 51 shows the sealed garage doors of the LASS. Figure 2-5 in Appendix A provides a layout location.

2.2.6.2 Building 4110 Remote Launch Operations Building

According to the *Historic American Engineering Record*, Volume 2, Building 4110 was the one story, earth-covered (13,150 sqft gross floor area) RLOB constructed to support SPRINT missile operations and to house personnel working at RSL Site No. 4. (HAER, 1996b, ND-9-AH, pp. 5-9) Foundations are reinforced concrete slab and the floor is a slab on grade. Exterior walls and roof are reinforced concrete constructed for nuclear hardness. Five rooms have VAT finish, one room had VAT on shock-isolated platforms and one room had VAT on removable panels. The interior walls in two of the rooms have acoustical treatment. The ceiling finish in seven rooms is acoustical lay-in panel. The building had electric, water and sewer utilities. Most equipment is removed from the facility and some interior flooding with groundwater has occurred. Utility systems are nonfunctional. Photographs of the area from the October 2009 Site Reconnaissance showing the entrance to the RLOB and its interior are shown in Appendix G, Photos 52 & 53. Figure 2-5 in Appendix A provides a layout location.

Lighting ballasts containing small amounts of PCBs were removed from the RSL site from June through November 1991. (HAER, 1996b, ND-9-V, p. 4)

2.2.6.3 Structure 4120 Heat Sink, South

Structure 4120 is an 83,000 gallon underground concrete Heat Sink tank constructed to provide cooling water for RLOB equipment. Foundations are concrete slabs. The roofs are supported by a row of concrete columns. Photograph of the area from the October 2009 Site Reconnaissance showing the RSL 4 Heat Sink area is in Appendix G, Photo 54. Figure 2-5 in Appendix A provides a layout location.

2.2.6.4 Structure 4121 Heat Sink, East

Structure 4120 is an 83,000 gallon underground concrete Heat Sink tank constructed to provide liquid (a water / ethylene glycol blend) to cool RLOB equipment. Foundations are concrete slabs. The roofs are supported by a row of concrete columns. Figure 2-5 in Appendix A provides a layout location.

2.2.6.5 Structure 4130 and 4131 Water Storage Tanks, A and B

Structure 4130 and 4131 consists of two steel USTs installed to contain potable water for the RSL 4 site. Foundations are concrete slabs. Figure 2-5 in Appendix A provides a layout location.

2.2.6.6 Structure 4135 Waste Stabilization Lagoon

Structure 4135 consists of Primary and Secondary cells of the Waste Stabilization Lagoon which is located on the south edge of the RSL 4 site. This structure was constructed to collect wastewater from the RSL 4 site. The retaining dikes of the lagoon are constructed of compacted backfill. Photograph of the area from the October 2009 Site Reconnaissance showing the RSL 4 Waste

Stabilization Lagoon is in Appendix G, Photo 55. Figure 2-5 in Appendix A provides a layout location.

2.2.6.7 Structure 4501 thru 4514 SPRINT Launch Silos/Cells 1 thru 14

Structures 4501 thru 4514 are the SPRINT Launch cells/silos 1 through 14. Photograph of the area from the October 2009 Site Reconnaissance showing a cover for one of the SPRINT Launch silos/cells is in Appendix G, Photo 56. For description, see Section 2.3.1.33.

2.2.6.8 Removed/Demolished Structures at RSL-4

Table 2.2.6.8 RSL-4 Removed/Demolished Structures

Facility Number	Facility	Reference (A, B, C, D)
Building No. 4115	Exclusion Area Sentry Station (EASS)	D
Structure No. 4125	Fuel Oil Tank (27,500 gallons)	C
No number given	Heating Oil Tank (500 gallons)	C

(A) Handwritten note in *Analysis of Existing Facilities at Stanley R. Mickelsen Safeguard Complex in Vicinity of Grand Forks. North Dakot*a, 1975 (USACE, 1975)

(B) *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9)*, 1996 (HAER, 1996)

(C) NMDJPO, 2000, pp. 17-19

(D) Greenwood, 2009. Personal Communication. 4 September 2009

2.2.7 Electrical Distribution System - Transformers

According to the 2000 *Final National Missile Defense Joint Program Office's Parcel-Specific Environmental Baseline Survey (EBS) for Potential NMD Program Facilities* (NMDEJPO, 2000), "All PCB-containing equipment at SRMSC was removed during an extensive removal action in 1991 … including 9 transformers, 746 radio frequency filters, 3,905 light ballasts, 2 transformer pads, 150 tons of debris, and contaminated concrete." (USASMDC, 1999a, p. 23) Photographs of the various transformers observed during the October 2009 Site Reconnaissance are in Appendix G, Photos 57 through 60.

2.3 SITE HYDROLOGY AND GEOLOGY

2.3.1 Surface Water Characteristics

Appendix H contains copies of the Nekoma, Billings Lake, Alsen Lake, Hanks Corner, Langdon West, and Edmore USGS topographic maps which include the MSR property and the four RSL sites. Appendix A, Figures 2-6 (MSR property), 2-7 (RSL 1), 2-8 (RSL 2), 2-9 (RSL 3), and 2-10 (RSL 4) are composite figures showing the available USGS topographical quadrangle map, USGS historical aerial photograph, and historical (1995-1998) as well as current (2005) aerial photographs from the North Dakota Geographical Information System (GIS) Hub Explorer. The geography at all locations

is a rolling topography with gentle slopes and a land surface elevation of approximately 1,630 feet above mean sea level.

Based on surface topography and a visual inspection of the MSR property and the four RSL sites, surface water is typified by intermittent streams. The intermittent streams generally flow towards the northwest into the Pembina and Tongue Rivers, with the Tongue River being the largest stream. The Tongue River is approximately 20 miles to the northeast of the MSR property, while the Pembina River is located nearly 62 miles to the east of the MSR property. According to the Site Manager, the MSR property and the four RSL sites are not within a 100-year floodplain. (USASMDC, 1999b, p. 3-412)

Due to slow infiltration rates, heavy rains often result in surface water ponding in surface depressions at all the sites.

The only natural surface water body on the MSR property is Roaring Nancy Creek (Appendix G, Photos 61 and 62), an intermittent stream that crosses the western side of the site. This creek has been classified as a wetland by the Corps of Engineers. Storm water at the MSR property flows through two drainage swales into the creek, and is carried northwest to a pond approximately 8 kilometers (5 miles) away (USASSDC, 1995b). Additionally, the water elevation from the MSR property's sewage lagoons has been periodically lowered by discharging to Roaring Nancy Creek when the lagoons fill from heavy rains. This discharge was previously regulated under an NPDES permit issued by the state of North Dakota. However, that permit is no longer in effect for the MSR property.

The MSR property region of influence is in the Devils Lake, Pembina, and Park watersheds, USGS Cataloging Units 09020201, 09020313, and 09020310 (U.S. EPA, 1998—Surf Your Watershed). There are no significant rivers or bodies of surface water in the region of influence (ROI). The ROI is affected by the soils' ability to hold water (soils are clay and silt, low permeability).

2.3.2 Geology/Hydrogeology Characteristics

MSR property and the RSL sites 1, 2, 3, and 4 are located in Cavalier County, eastern Ramsey County, and the western half of Walsh County which is the Drift Prairie physiographic province, characterized by gently rolling terrain and abandoned glacial drift and covered with glacial till. The platform deposits of glacial drift and till are covered by 11.8 to 23.6 inches of black topsoil, or chernozem, which is essentially stone-free and rich in decomposed limestone and organic matter (NMDJPO, 2000, p. 13).

Loam is the dominant soil type at the MSR site, and there are three predominant subtypes of loam present -- the Svea-Barnes Loam, the Hamerly-Cresbard Loam and Vang Loam (USASMDC, 2001, p. 12). The Svea-Barnes Loam mostly consists of loam, clay loam, and silty loam and overlies approximately 42 percent of the site. These types of soils have slow to moderate permeability with loam / clay-loam textures. (USASDC, 1992, p. 1-10)

The Pierre and Dakota aquifers, which underlie the MSR site, are considered to be deep aquifers. The Pierre aquifer is 170 to 250 feet below ground while the Dakota aquifer lies 250 to 1,300 feet

below ground. Water from these aquifers is used for industrial, domestic, and livestock purposes. Water from the Pierre Aquifer has a high salinity content and is considered toxic, and is not used for domestic purposes. Groundwater at each RSL is similar to that described for the MSR site. (BMDO, 2000, p. 2-22)

Groundwater flows to the west-northwest at the MSR but in a southerly direction in the area south of the Waste Stabilization Ponds. (USASMDC, 2000b, p. 3-46)

2.4 SITE UTILITIES

Water Service – The source of the water for the MSR site was originally from the well field of the offsite water supply system. For emergency use there was a 30-day open storage reservoir of 15,500,000 gals. (USACE, 1975, p. 98) This reservoir was filled in late 1990s. The well system and distribution lines that supplied both the MSR and PAR sites has been transferred to private rural water organizations. RSLs 1, 2, and 4 were originally supplied by truck from a potable source and the water was stored in the two underground steel tanks of 27,500 gallons each. The total capacity of the two tanks was enough for approximately two weeks supply. (USACE, 1975, p. 186) RSL-3 was originally supplied with water from a government owned water line running from the Senator Young Dam to the RSL single underground tank. This system is not currently active and water pumping equipment is removed. The MSR site presently obtains approximately 9,600 gallons of water annually from the Langdon Rural Water Users, a commercial supplier. The Langdon Rural Water Users provided all customers approximately 57,500 gallons of water in 1997. (USABMDO, 2000, p. 2-14)

Waste Disposal and Sanitary Sewer System – According to the 1975 *Analysis of Existing Facilities* (USACE, 1975, pp. 99-101), the MSR system consists of the following facilities:

a. Waste Stabilization Lagoon that consists of: a main pond of 2 cells with a total area of 914,000 sqft and a total capacity of 34,183,000 gallon; the industrial waste pond; and the fire water storage pond.

b. Lift Station (Appendix G, Photo 63) that is located 150 feet west of the Chapel, on the north side of the road. It contains 2 each 20 HP sewage lift pumps and 1 each 1/2 HP sump pump.

c. Wet well located adjacent to the lift station.

d. Sanitary Sewer Lines in the Tactical Area includes a 160 foot force main of 4 inch epoxy lined steel pipe from PEUT to waste stabilization pond and 1,008 feet of 3 inch epoxy lined steel pipe from the MSRPP to the waste' stabilization pond. In the Non-Tactical Area, there is 6,990 feet of sewer line and in the Family Housing Area there are 5, 287 linear feet of 8 inch PVC pipe sewer main, 3,171 linear feet of 6 inch PVC pipe sewer main, and 2,742 linear feet of 4 inch PVC pipe sewer line.

e. Spray Irrigation System consisting of a chlorine contact chamber and pump house; gravity and pressure lines; and 5 spray nozzles are located within the limited area fence. This system has been unused since the site was deactivated and equipment is removed from the pumphouse.

Sewage generated by the small caretaker staff at one time was handled by the use of incinerator toilets in Building 371 (BMDO, 2000, p. 2-15). During the 2009 Site Reconnaissance, the Site Manager explained that sewage is now released through the lift station.

Gas & Electric – Supply: Power for the MSR tactical load was provided by Otter Tail Power Co. and for the MSR support load by Cavalier Rural Electric Cooperative, Inc. In both cases, the power was delivered to the onsite substation. The Government-owned on-site distribution system served all existing facilities in the non-tactical area and the radar building in the tactical area. (BMDO, 2000, p. 2-15) The primary on-site electrical substation at the MSR has been removed and all power now used in the caretaker status is provided by Cavalier Rural Electric. The only electric servicein the tactical area is limited lighting and sump pump operation for the MSCB and Power Plant. Natural gas is delivered to the onsite metering station by Montana - Dakota Utilities Co. (USACE, 1975, pp. 99-101) The original on-site Government-owned natural gas distribution system is still in place. (BMDO, 2000, p. 2-15) Natural gas distribution lines remain in place in the tactical area but have been unused since the site was deactivated. Gas and electric service is capped/terminated to removed/demolished facilities at the MSR.

Electricity and natural gas service are not currently available at RSL sites 1, 2, and 4. On-site distribution systems are abandoned in place. RSL site 3 has a single line source of electrical power provided by the Cavalier Rural Electric Cooperative to the RLOB. (BMDO, 2000, p. 2-16) Supply Power for the RSL site is to a utility pole in the access road right-of-way. (USACE, 1975, pp. 99-101)

2.5 WATER SUPPLY WELLS & SEPTIC SYSTEM

A search of Federal and State water well databases in the EDR report (Appendix E) identified five water supply sources located within approximately 1 mile of the MSR property; no wells within approximately 1 mile of the RSL 1 property, two water sources within approximately 1 mile of the RSL 2 property, six water supply sources located approximately 1 mile of the RSL 3 property, and one water supply source located within approximately 1 mile of the RSL 4 property. Wastewater from current MSR activities flows to the lift station west of the Chapel where it is pumped to the sewage lagoon. There have been cases when equipment failures required waste to be pumped directly from the lift station to the Roaring Nancy Creek. Sampling of discharges and coordination with State Health Department assured discharges were not hazardous in these instances. The discharge to the lift station in the caretaker status is estimated to be over 99% groundwater. No wastewater is generated at RSLs 1, 2, or 4. Groundwater that has infiltrated into the RLOB at the RSL 3 site is currently being collected at the building's sump pump and removed to the site's waste stabilization pond; the sump pumps at the other three RSLs have been sealed.

2.6 SRMSC OFF-SITE AREAS OF CONCERN

The 1999 *Final CERCLA Expanded Preliminary Assessment* (USASMDC, 1999b) refers to four off-site areas of concern. All have been closed. (Interview; Appendix D)

3 SITE HISTORY

3.1 HISTORY OF OWNERSHIP

Land titles for the SRMSC MSR property and the four RSL sites were reviewed by US Army Corps of Engineers, Omaha District, Real Estate Division in preparation for the excess of the properties. That report has been provided to ACSIM under separate cover.

Historical documentation supports the 1970-1973 construction date of the SRMSC (HAER, 1996a, p. 1).

3.2 PAST USES AND OPERATIONS

The decision to authorize the expenditure of funds for the deployment of Safeguard was passed by Congress on 6 August 1969 (HAER, 1996a, p. 32). Congressional action in 1973 limited deployment of the defensive system to the site near Grand Forks, North Dakota. The equipment readiness date for the SRMSC was achieved on 10 October 1974; installation of missiles began in 1974; initial operating capability was reached in April 1975; and the Safeguard system achieved full operational capability on 1 October 1975 (HAER, 1996a, p. 35). Historical information sources suggest that SRMSC was used for agricultural prior to 1970 (USASSDC, 1994, p. 2-13).

On 10 February 1976 the Safeguard mission was terminated. Only the PAR, which was transferred to the U.S. Air Force, remained operational as part of the early warning system (HAER, 1996a, p. 36).

The Safeguard ABM system was designed to protect U.S. Minuteman ICBM bases from attacks by enemy ballistic missiles (HAER, 1996a, p. 32). The experience gained in developing and deploying the Safeguard system was invaluable and put the United States in a favorable technological position which was to be preserved following the Ballistic Missile Defense (BMD) redirection exclusively to research and development (HAER, 1996a, p. 35).

The MSR property primarily functioned with an administrative, logistical, and tactical missile launch facilities. It is assumed that only preventative maintenance of military vehicles occurred at the MSR property. Construction on the MSR property began in 1972 and the site's full operational capability was reached in October 1975. (HAER, 1996a, p. 35) The mission of the SRMSC terminated in February 1976.

In the MSR Area, the Industrial Building (Bldg 364) was used to perform maintenance on military equipment. Activities inside the Industrial Building were preventative maintenance checks, including checking vehicle fluids such as motor oil, water, and antifreeze, and light maintenance activities. Waste that was generated from these activities may have been segregated. After the site was transferred to the Department of Interior (DOI), wastes generated from DOI's training activities in the Industrial Building were segregated prior to disposal, according to an interview with a former federal employee. (Appendix D, Interviews)

According to the 2001 *FINAL Comprehensive Environmental Response, Compensation, and Liability Act; Expanded Site Inspection*, a wash rack located behind Bldg 364 and its catch basin connected to storm sewers that eventually discharged to grade and eventually left site, in most instances via Roaring Nancy Creek. (USASMDC, 2001, p. 2-16) Water was visible in the wash rack's sump during the October 2009 Site Reconnaissance, but the depth to the water's surface made it difficult to confirm if there was a sheen on the water's surface.

According to the 1974 *Analysis of Existing Facilities*, a Vehicle Fuel Dispensing Station (Structure 379) in the MSR Area included two USTs. The fueling station structure and associated USTs were removed in 1995-1996. Three gasoline USTs at the former Army Exchange Service Station (Bldg 306) were removed in 1991. (Appendix D, Interviews)

In the years leading up to the DoD acquisition of the SRMSC property, a review of historical USGS topographic maps (Appendix H, Figures H-1 through H-6) corroborates the historical information provided for the MSR property and the four RSL sites. The maps show the property unoccupied by the MSR and RSL sites in the earliest topographic map available from the U.S. Geological Service (USGS) from 1963, 1967, and 1970.

3.3 PAST USE, STORAGE, DISPOSAL, AND RELEASE OF HAZARDOUS SUBSTANCES

3.3.1 Past Use and Storage of Hazardous Substances

Information related to the past use and storage of hazardous substances at the Site was compiled through review of available Site records, Federal and State environmental databases, and an interview with the SRMSC site manager.

Historically the Industrial Building (Bldg 364) was used to conduct preventative maintenance of military vehicles. Previous environmental investigations in the 1990-2000 timeframe have been conducted at the MSR and RSL sites. They have focused on unauthorized releases to the environment at the former wash rack which was located behind the Industrial Building in the MSR Area.

Army Exchange Service Station (Bldg 306) operated for approximately 2 years and once the SRMSC was transferred to the DOI, it was no longer used and the tanks were removed in 1991. No unauthorized releases were documented at this site.

The Universal Missile Building (Bldg 456) operated for approximately 2 years. Inside the building, components of the SPARTAN and SPRINT missiles were mated. In the 1970s, the U.S. Army used solvents on other missile programs to ensure that component surfaces were clean prior to assembly. No unauthorized releases were documented at this site

The applicable environmental investigative reports related to these structures are included in Electronic files in the enclosed CD

Certain types of chemical products used and stored at the MSR and RSL sites would have contained CERCLA hazardous substances and would have been stored on a rotational basis in amounts necessary to support the unit through direct support level maintenance. There is no documentation that CERCLA hazardous substances were stored at the MSR and RSL sites for 1 year or more in excess of corresponding reportable quantities

3.4 PAST PRESENCE OF BULK PETROLEUM STORAGE TANKS

Based upon a review of available MSR and RSL site records, a search of Federal and State environmental databases, site reconnaissance and interviews with Army Reserve personnel there are no USTs currently located on the MSR or the RSL properties. According to the 1991 EPIC Company's *Underground Storage Tank Closure Report*, historically, one 12,000 gallon gasoline and one 5,000 gallon diesel UST were removed from Dispensing Station, Vehicle Fuel (Structure 379) with Tanks Nos. 377 & 378; one 1,000 gallon fuel oil UST was removed from the Installation Headquarters Building (Building S-301); three 9,000 gallon (ea) gasoline USTs were removed from the Army Exchange Service Station (Building 306); two 12,000 gallon fuel oil UST were removed from the Fuel Oil Holding Tanks (North - Structure 403 and South - Structure 404); two ASTs were removed from Structures 406 and 407 (USACE, 1975. p. 30); and a 27,500 gallon Fuel Oil Tank and a 500 gallon Heating Oil Tank were either closed or in place or removed at each of the RSL sites.

According to the environmental reports and documentation provided by the USASMDC, no UST releases were reported. Tank removal and remediation activities were conducted between 1991 and 1995. According to the Site Manager, the only soil that was impacted by a UST release was in the vicinity of the Fuel Oil Building (Bldg 405) and that soil was remediated when the USTs were removed in 1995-1996. Leaking underground storage tank (LUST) activities were “Closed” with the State of North Dakota in October 1995, and the MSR and RSLs were placed on the historic LUST database.

3.5 REVIEW OF PREVIOUS ENVIRONMENTAL REPORTS

A review of site records produced several reports pertaining to the Site. The following subsections provide a brief summary of these reports.

3.5.1 *Master Plan, Analysis of Existing Buildings, Stanley R. Mickelsen Safeguard Complex: MSR Site, PAR Site, RSL 1, 2, 3, 4*. January 1975. (USACE, 1975)

This report evaluates the buildings and structures at the SRMSC, reviewing the land and water areas, facilities, grounds, utilities, and athletic and recreation areas for the MSR property, the PAR property, and the four RSL sites. As well as providing the dimensions and construction materials for the various buildings and structures, among the information provided is a description of specific material used in the construction as containing asbestos.

3.5.2 *Water Quality Engineering Survey No. 65-102-76,* August 1975. (USAEHA, 1975)

The 1975 USAEHA (currently USACHPPM) *Water Quality Engineering Survey* concluded that the outdoor washrack at the MSR may require a NPDES discharge permit since at that time it was not connected to the sanitary sewer. This outdoor washrack was for washing vehicles which were too large to be cleaned at the indoor washrack. (USAEHA, 1975, p. 7) Wastewater from this washrack was discharged into the drainage ditches which left the site. However, the wastewater normally had evaporated or percolated into the ground before it reached the boundary. (USAEHA, 1975, p. 13)

The industrial wastewater (primarily from the site's cooling towers and containing low concentrations or sulfuric acid, hypochlorite, and polyphosphates [USAEHA, 1975, p. 11]) discharged to the Roaring Nancy Creek was in violation of the effluent limitation promulgated in paragraph 3-9c AR 200-1. (USAEHA, 1975, p. 15) In addition, USAEHA noted that the MSCB Fire Water Storage Pond had a 6-inch layer of what appeared to be and had the odor of, diesel fuel oil floating on the surface and that the ground area around the perimeter of the pond for approximately 10 feet at the time of the site visit was saturated with the oil to an apparent depth of about 2 to 6 inches. (USAEHA, 1975, p. 13) Once within 1974-1975, the pond overflowed its banks and discharged oil on the adjacent ground covering an area of approximately 400 sqft. (USAEHA, 1975, p. 11) After the discharge incident at the MSR site, NPDES applications for Permits to Discharge from the MSR and RSL Sites 1 through 4 waste stabilization ponds were submitted to the EPA. These were submitted to insure that discharges would be allowed if a situation arose in which overflow conditions would necessitate a discharge. (USAEHA, 1975, p. 13)

3.5.3 *Inspection for Asbestos Containing Materials,* October 1991. (AJT, 1991)

In October 1991, AJT & Associates conducted a walk though of various SRMSC buildings in order to complete an Asbestos Management Plan. Together, Environmental Protection Inspection and Consulting, Inc. (EPIC) and AJT & Associates identified ACM in the locations shown on Table 3-1 (AJT, 1991, p. 1). Asbestos containing materials (ACMs) were identified in 10 buildings at the MRS property. Friable ACMs were identified in 7 buildings (paper pipe thermal insulation, mud fittings, joint compound, and wallboard).

3.5.4 *Inspection for Asbestos Containing Materials,* November 1991. (USACE, 1991)

During November 1991 *Inspection for Asbestos Containing Materials*, a total of 17 buildings were inspected and 46 samples were obtained. Floor tile in 12 buildings was positive for asbestos. Adhesive on the linoleum was identified as positive in 4 buildings. Exterior transite panels were identified around the base of 4 buildings. Sheet rock compound tested positive in one building. Furnace wraps around the base of the furnaces in the crawl spaces of 3 buildings was noted as friable as were the mudded fittings on the thermal insulation systems located in two buildings. Ceiling tile in one building was also identified as positive for asbestos. Together EPIC and AJT & Associates identified ACM in the locations shown on Table 3-1 (USACE, 1991, pp. 1-2)

Table 3.5.4 Inspections for Asbestos Contain Materials, October & November 1991
(AJT, 1991 and USACE, 1991)

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg S-301 Installation Headquarters	*Thermal insulation (mudded joints)* *Ceiling panels* *Black mastic (floor tile adhesive)* *Roofing material, gray patch*	*375 sqft* *3,700 sqft* *18,600 sqft* *100 sqft*	*Damaged - F* *Undamaged - F* *Undamaged - NF* *Undamaged - NF*
Bldg ___ HQ Storage	*Ceiling tile*	*4,200 sqft*	
Bldg S-306 Gas Station	*Ceiling tile, pinhole & fissured, 2x4* *Floor tile, cream* *Transite*	*800 sqft* *45o sqft* *1,200 sqft*	
Bldg 340 Chapel	Floor tile, gray w/dark gray, 12x12 Floor tile, beige w/ tan & white, 12x12 Roofing material, gray patch	2,860 sqft 2,040 sqft 50 sqft	Undamaged - NF Undamaged - NF Undamaged - NF
Bldg 346 Gymnasium	Thermal insulation, boiler gasket Thermal insulation, mussed elbows Floor tile, brown w/gray & white, 12x12 Floor tile, beige w/tan & white, 12x12 Roofing material, gray patch	5 sqft 23 sqft 750 sqft 800 sqft 30 sqft	Undamaged - F Damaged - F Undamaged - NF Undamaged - NF Undamaged - NF
Bldg S-348 Enlisted Men's Dining Hall	*Thermal insulation, furnace wrap* *Floor tile, brown w/gray & white, 12x12* *Floor tile, gray w/dark gray, 12x12* *Floor tile, light gray w/dark gray & white* *Roofing material, gray patch* *Linoleum (backing only)* *Transite (exterior)*	*5.3 sqft* *3,355 sqft* *1,590 sqft* *900 sqft* *20 sqft* *1,800 sqft* *1,590 sqft*	
Bldg S-345 Dispensary	*Linoleum (backing only)* *Transite (exterior)* *Thermal insulation , furnace wrap*	*5,190 sqft* *800 sqft* *5.3sqft*	
Bldg 350 Community Center	Thermal insulation, boiler gasket Black mastic (floor tile adhesive) Floor tile, brown w/gray & white, 12x12 Floor tile, gray w/dark gray, 12x12 Floor tile, red, 12x12 Roofing material, gray patch	5 sqft 12,080 sqft. 12,080 sqft 2,300 sqft 2,000 sqft 20 sqft	Undamaged - F Undamaged - NF Undamaged - NF Undamaged - NF Undamaged - NF Undamaged - NF

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg S-355 Officer's Complex	*Thermal insulation, furnace wrap* *Floor tile, brown w/gray & white* *Transite (exterior)* *Linoleum (backing only)*	*5.3 sqft* *1,610 sqft* *1,456 sqft* *300 sqft*	
Bldg 360 Administrative Headquarters	Thermal insulation, boiler gasket Floor tile, brown w/gray & white, 12x12 Floor tile, gray w/white & dark gray, 12x12 Floor tile, light gray w/dark gray, 12x12	5 sqft 6,910 sqft. 3,800 sqft 4,600 sqft	Undamaged - F Undamaged - NF Undamaged - NF Undamaged - NF
Bldg 364 Industrial Building	Thermal insulation, boiler gasket Floor tile, beige w/gray, 12x12 Floor tile, brown w/gray & white, 12x12 Roofing material, gray patch	5 sqft 894 sqft. 925 sqft 20 sqft	Undamaged - F Undamaged - NF Undamaged - NF Undamaged - NF
Admin Trailers	*Linoleum*	*16,200 sqft*	
Bldg 371 Telephone Exchange (Polar Bldg)	Wall panel, sheetrock joint compound Floor tile, beige w/gray, 12x12 Transite Roofing material, gray patch	200 sqft 388 sqft 20 sqft 20 sqft	Undamaged - F Undamaged - NF Undamaged - NF Undamaged - NF
Bldg 401 MSR LASS (Security Police)	Floor tile, beige w/gray, 12x12 Transite, miscellaneous Roofing material, gray patch	2,260 sqft. 2,200 sqft 20 sqft	Undamaged - NF Undamaged - NF Undamaged - NF
Bldg ___ Teen Center	Floor tile, gray w/dark gray & white	1,750 sqft	

Italics indicates building/structure that has been removed or demolished

3.5.5 *Recommendations for Asbestos Removal and Identification of Hazardous Materials in Non-Tactical Areas,* March 1992. (USASDC, 1992a)

Floor tile and exterior transite panels were identified as asbestos containing material (ACM) in ten Family Housing Units. No suspected ACM was identified in the storage units in the Family Housing area. No suspect ACM was identified in the Training Center. No hazardous materials were identified at any of the buildings surveyed. (USASDC, 1992a)

3.5.6 *Natural Resources Management Plan,* September 1992. (USASDC, 1992b)

The 1992 *Natural Resources Management Plan* identified eight wetland areas on the MSR site. Three of these are naturally occurring, and five have developed in excavated lagoons and drainage ditches. The MSR lagoon wetlands are probably not jurisdictional wetlands under Section 404 of the Clean Water Act, but the wetlands in the excavated drainage swales are potentially jurisdictional. (USASDC, 1992b, p. 3-2) Palustrine emergent wetlands had become established in all waste stabilization lagoons at the eastern RSL sites. (USASDC, 1992b, pp. 3-4-6)

3.5.7 *Final Environmental Compliance Assessment Report,* September 1992. (USASSDC, 1992)

The assessment included review of environmental regulatory areas. Seven environmental problems have been identified where site conditions were not in compliance with current regulations in the following four regulatory areas: Clean Water Act (lack of a current Spill Prevention Control and Countermeasures Plan), Resource Conservation and Recovery Act, Subtitle C (unknown and expired shelf-life materials), Resource Conservation and Recovery Act, Subtitle D (unpermitted landfill), and Toxic Substances Control Act (incomplete PCB inventory). Since 1992, all of these issues have been satisfactorily resolved.

3.5.8 *Memorandum for Record: Radon Reduction Program at Stanley R. Mickelson*. December 1993. (MFR, 1993)

A site specific radon survey was conducted for the Site between April 1993 and July 1993. Radon levels ranged from 0.30 to 7.5 picoCuries per liter of air (pCi/L). Only two areas had elevated radon: the Enlisted Mens' Dining Hall (Bldg S-348) basement (7.5 pCi/L) and the Headquarters Building (Bldg S-301) basement (4.4 pCi/L). The Dining Hall facility was demolished, the basement filled with debris and the land surface re-graded. The basement of the former headquarters Building is in fair shape and there are no occupants in the basement of the Headquarters Building. All other readings were below the United States Environmental Protection Agency (USEPA) recommended action level of 4 pCi/L. United States Geological Survey (USGS).

3.5.9 *Stanley R. Mickelsen Safeguard Complex Site Investigation and Analysis, Engineering Report,* March 1994. (USASSDC, 1994a)

Earth Technology Corporation's 1994 *Site Investigation and Analysis* noted that a large quantity of fluid accumulated in the MSRPP (Bldg 440) during the 1980s and it remained flooded for approximately 10 years. In December 1989, standing fluid approximately 15 feet deep was observed in the MSRPP. In 1991, approximately 34 million gallons of fluid that had infiltrated the MSRPP and the adjoining MSCB (Bldg 430) were removed during the dewatering effort managed by the USACE. Fluid stored in the Heat Sink (Structure 423) was also removed. (USASSDC 1994, p. 3-3) The fluid removed in 1991 was found to contain Aroclor-1254, a PCB compound. Numerous samples from other flooded areas of the MSRPP taken at the same time did not indicate PCBs. (USASSDC, 1994, p. 3-3)

A 1992 ECAS assessment (USASSDC, 1992) noted approximately 8 inches of an unidentified fluid had collected in the MSRPP pipe tunnel and this water was later characterized as containing lead, mercury, Aroclor-1254, and total petroleum hydrocarbons (TPH) (as diesel). (USASSDC, 1994, p. 3-3) The source of fluid observed in the tunnel following the dewatering operation was less clear. The primary constituent of the fluid in the tunnel was water. Potential sources of the water in the tunnel included condensation and groundwater infiltration. (USASSDC, 1994, p. 3-7) Based on the analytical results obtained from the analysis of the contents of the pipe tunnel it appeared possible that contaminants may have been released to the environment. (USASSDC, 1994, p. 3-8)

The 1994 *Site Investigation and Analysis* identified 37 potential PCB items but none of these items were positively identified as containing regulated levels of PCBs. (USASSDC, 1994, p. 4-8) Based on visual and document research, ETC concluded that the following 21 items contain regulated levels of PCBs: 16 General Electric (GE) capacitors; one ITE dry transformer; and 4 Sta-Rite transformers. (USASSDC, 1994, p. 4-8) ETC also concluded that it was unlikely that 14 other items (including 2 AC generators, one generator set, 2 motor generators, 8 Sta-Rite transformers and one GE transformer) contain regulated levels of PCBs. (USASSDC, 1994, p. 4-8)

3.5.10 *Preliminary Assessment No. 38-26-1321-94,* April 1994. (USASSDC, 1994b)

According to the USACHPPM 1994 *Preliminary Assessment*, seven sites at SRMSC could have released hazardous substances to the surrounding environment: the flooded SPARTAN missile silo; the Warhead Handling Building (WHB); the Universal Missile Building (UMB); the former Missile Site Radar (MSR) construction material disposal site; the MSR wastewater ponds; the Missile Site Control Building (MSCB) fire water storage pond; and the MSR Power Plant pipe tunnel. The former MSR construction material disposal site probably had not adversely impacted the surrounding environment because it was only used for inert construction debris irregularly. (USASSDC, 1994, p. 1) In addition, jurisdictional and non-jurisdictional wetlands have been identified at the MSR and RSL sites. The wastewater ponds had been declared potential non-jurisdictional wetlands because of vegetative growth. A portion of the ditch that flows to Roaring Nancy Creek is a jurisdictional wetland. (USASSDC, 1994, p. 20)

3.5.11 *Final Report, Site Inspection No. 38-EH-3673-95*, September 1995 (USASSDC, 1995b)

3.5.11.1 SPARTAN Missile Cells/Silos

Analyses for manmade radionuclides in water samples from SPARTAN missile cells/silos indicated that nuclear warheads on the SPARTAN missiles did not leak or release radioactivity at the site. However, the water in the silos was contaminated with chromium and other heavy metals. (USASSDC, 1996b, p. 1)

3.5.11.2 MSR Wastewater Ponds

Sediment samples from the center stabilization pond contained concentrations of total petroleum hydrocarbons (TPH) exceed the State of North Dakota's action level for hydrocarbon contaminated soil. (USASSDC, 1995b, p. 2)

3.5.11.3 Missile Site Control Building Fire Water Storage Pond

The activities at the former MSCB fire water storage pond have contaminated soil and ground water in the immediate vicinity. The concentrations of TPH in the soil exceed the State's action level for contaminated soil. The ground-water samples contained trichlorofluoromethane and trichloroethene. (USASSDC, 1995b, p. 2)

3.5.11.4 Missile Site Radar Power Plant Pipe Tunnel

The trace amounts of diesel fuel present in the pipe tunnel have not leaked or migrated to the soil or ground water outside the tunnel. Very low concentrations of TPH were detected in the borehole soil samples and the analytical results of the ground-water samples did not indicate contamination. (USASSDC, 1995b, p. 2)

3.5.11.5 Electrical Vaults and Signal Vaults

Seven of the eight signal vaults at the missile field contain substantial concentrations of TPH, as well as an oily layer. PCBs were not detected in any of the oil/water samples but Arochlor 1254 was identified in the oil. (USASSDC, 1995b, p. 2)

3.5.12 *Asbestos Survey Report & Asbestos Management Plan for Asbestos Containing Materials at the Stanley R. Mickelsen Safeguard Complex North Dakota*, September 1995. (USASSDC, 1995c)

In 1995, Teledyne Brown Engineering (TBE) inspected 20 buildings and a SPRINT missile silo. Table 3.5.9 provides the results of that inspection. (USASSDC, 1995c, Appendix A) Asbestos containing materials (ACMs) were identified in 12 buildings at the MRS property and 13 buildings at the four RSL sites. Friable ACMs were identified in the 6 buildings (paper pipe thermal insulation, mud fittings, joint compound, and wallboard).

Table 3.5.12 Asbestos Survey Report & Asbestos Management Plan
(USASSDC, 1995c)

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg S-304 Installation HQ Annex	*Ceiling Panel, fissured, 2x4* *Transite, wall panel*	*1,690 sqft* *10 sqft* *600 sqft*	*Undamaged - F* *Damaged - F* *Undamaged - NF*
Bldg 369 Pump House	Roofing material (black patch)	30 sqft	Undamaged - NF

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg 405 Fuel Oil Bldg	*Gasket on pipe*	*8 sqft*	*Undamaged - NF*
Bldg 430 Missile Site Control Bldg	Mastic, black Steel support caulking Conduit putty Vent putty Filler compound	4,197 sqft 16,810 sqft 760 sqft 3,040 sqft 5 sqft 900 sqft Not provided	Undamaged - NF Significantly damaged - NF Undamaged - NF Damaged - NF Undamaged - NF Undamaged - NF Damaged - NF
Bldg 445 Missile Site Radar Power Plant	Gasket on elevator door Thermal insulation, pipe elbow Thermal insulation, pipe run Thermal insulation, flue insulatio Mastic, black Tan gasket Gray gasket Transite debris	28 sqft 2 sqft 12 sqft 150 sqft 1,200 sqft 4,700 sqft 15 sqft 5 sqft 20 sqft	Undamaged - F Damaged - F Significantly damaged - F Significantly damaged - F Significantly damaged - F Significantly damaged - NF Damaged - NF Significantly damaged - NF Significantly damaged - NF
Bldg 455 Universal Missile Bldg	Mastic, black White gasket Black gasket Roofing material, black mastic and felt Roofing material, gray patch	Not provided 10 sqft 10 sqft 48 sqft 2 sqft 5 sqft	Undamaged - NF Undamaged - NF Undamaged - NF Undamaged - NF Damaged - NF Undamaged - NF
Bldg 456 Warhead Handling Bldg	Conduit putty	1 sqft	Undamaged - NF
Bldg 460 Exclusion Area Sentry Station	Caulk on pipe Mastic, black	300 sqft 1 sqft	Undamaged - NF Undamaged - NF

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg 463 Electrical Distribution Center, East	Vault hatch gasket Gasket around manhole	5 sqft 10 sqft	Undamaged - NF Undamaged - NF
Bldg 470 Laun Area Utility Tunnel	Conduit putty	60 sqft	Undamaged - NF
Bldg 471 Terminal Structure "A"	Conduit putty	10 sq ft	Undamaged - NF
Bldg 472 Terminal Structure "B"	Conduit putty	10 sq ft	Undamaged - NF
Bldg 1101 Limited Area Sentry Station	Mastic, black	1,075 sqft	Undamaged - NF
Bldg 1110 Remote Launcl Ops Bldg	Mastic, black Flue gasket	1,100 sqft 8 sqft	Undamaged - NF Undamaged - NF
Bldg 2101 Limited Area Sentry Station	Mastic, black	1,075 sqft	Undamaged - NF
Bldg 2110 Remote Launcl Ops Bldg	Ceiling panel, pinhole, 2x4 White duct gasket Mastic, black	70 sqft 50 sqft 27 sqft 1,800 sqft	Undamaged - F Significantly damaged - F Undamaged - F Significantly damaged - F Undamaged - NF
Bldg 3101 Limited Area Sentry Station	Mastic, black	1,074 sqft	Undamaged - NF

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg 3110 Remote Launcl Ops Bldg	White duct gasket Mastic, black Conduit putty	47 sqft 3 sqft 1,800 sqft 1 sqft	Undamaged - F Damaged - F Undamaged - NF Undamaged - NF
Bldg 4101 Limited Area Sentry Station	Mastic, black Thermal insulation, pipe wrap	1,074 sqft 15 sqft 5 sqft	Undamaged - NF Undamaged - F Significantly damaged - F
Bldg 4110 Remote Launch Ops Bldg	Ceiling panel, pinhole, 2x4 Mastic, black Flue gasket Black pipe gasket	500 sqft 800 sqft 1,300 sqft 9 sqft 1 sqft 9 sqft 1 sqft	Undamaged - F Significantly damaged - F Undamaged - NF Undamaged - NF Damaged - F Undamaged - NF Damaged - F
SPRINT Missile Cell/Silo	Electrical covering	28 sqft 2 sqft	Undamaged - F Damaged - F

Italics indicates buildings that have been removed or demolished

3.5.13 *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9),* September 1996. (HAER, 1996a and 1996b)

After the deactivation of the SRMSC, salvage operations at various buildings created openings which permitted groundwater to enter the MSCB (Bldg 430) and the MSRPP (Bldg 440). In December 1989, an on-site environmental inspection found polychlorinated biphenyls (PCBs) in the MSCB. (HAER, 1996b, ND-9-B, pp. 6-7) Within a year the U.S. Environmental Protection Agency (EPA) issued a Notice of Non-compliance against the SRMSC for violations of the Toxic Substances Control Act, and a major effort was undertaken to test, remove, and dispose of all PCB-containing sludge and debris and pump out many millions of gallons of water. It was assumed that a number of PCB-containing equipment items might be located under the water flooding the MSCB and the MSRPP. By 23 January 1992, all structures were dewatered. (HAER, 1996b, ND-9-B, pp. 6-7) Other PCB-related work in the MSR site at that time included:

- removal of approximately 150 tons of delaminated building material and debris from the MSCB lower level and MSRPP;
- removal of RFI capacitors and adjacent debris and floor tiles;

- removal of lighting ballasts from the MSCB mezzanine, second floor, third floor, fourth floor, tunnel, and power plant tunnel;
- removal of RF filters from the MSCB mezzanine, second floor, third floor, fourth floor, MSCB tunnel, and power plant tunnel; and
- removal of 1 inch of concrete from the upper portion of the MSCB unloading dock. (HAER, 1996b, ND-9-B, pp. 6-7)

The 1996 *Historic American Engineering Report* text also includes locations of vinyl asbestos tile in various rooms in the different buildings

3.5.14 *Final Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Preliminary Assessment,* September 1999. (USASMDC, 1999b)

3.5.14.1 Missile Site Radar

Various hazardous materials have been utilized. These include various petroleum products (fuel, lubricating oils, cooling oils), solvents, coolants, water treatment chemicals, and heavy metals (in coatings and in various equipment and building components). The disposal of liquid waste via the wastewater stabilization lagoons, the fire water storage pond, and unregulated discharges to the Roaring Nancy Creek is well documented. (USASMDC, 1999b, p. 5-1)

According to the 1999 *Final Expanded Preliminary Assessment,* in 1991, EPIC Company, Inc. removed 18 steel and fiberglass USTs and closed in place one 70,000-gallon, field-constructed, concrete UST. In 1998, Ogden Energy and Environmental Services removed and properly disposed of oil from a number of electrical and communications vaults at the MSR Missile Field. (USASMDC, 1999b, p. 5-1)

According to the 1999 *Final Expanded Preliminary Assessment,* there are no significant target populations for the MSR source areas. The nearest groundwater well used for drinking or agriculture is the former Nekoma municipal well, which is now the backup well. The nearest surface water body, the Roaring Nancy Creek, is an intermittent stream that does not connect to any drinking water supplies and is not a frequently used fishing stream. The nearest full time population of residents is in the Town of Nekoma (population 61), 1 mile to the south. There are four onsite workers who spend 8 hours per day, 5 days a week at the MSR. There are no threatened or endangered species present. (USASMDC, 1999b, p. 5-2)

3.5.14.2 Remote SPRINT Launch Sites 1 through 4

Various hazardous materials may have been utilized at the RSL sites. These include various petroleum products (fuel, lubricating oils, cooling oils), solvents, coolants, and water treatment chemicals. (USASMDC, 1999b, p. 5-2) Removal activities have included de-watering, PCB removal and UST closures by the EPIC Company in 1991-1992. Ogden Energy and Environmental Services removed oil from an electrical vault at RSL-4 in 1998. At the time of this report (September 1999), no sampling of the evaporative lagoons has occurred. (See USASMDC, 2001, for information on sampling of the RSLs' lagoons in 2001) No industrial wastewater was generated

at the RSLs. There are no significant target populations at any of the RSLs. (USASMDC, 1999b, p. 5-3)

3.5.15 *Dismantlement or Destruction of Anti-Ballistic Missile Facilities, Final Environmental Assessment,* February 2000. (BMDO, 2000)

The report mentioned that asbestos containing material (ACM) would be found throughout facilities that would be dismantled or destroyed; that the facilities that would be dismantled or destroyed may have been painted with lead-based paint (LBP) and chromate-based paint; and that water contaminated with chromium (or other pollutants) that has been reportedly sampled in the SPRINT or SPARTAN launchers would be removed, treated, and disposed of in accordance with applicable requirements. (BMDO, 2000, p. ES-1)

There are no air emission sources at the sites. (BMDO, 2000, p. 2-2)

At the MSR site, Roaring Nancy Creek and its drainage area have been identified as jurisdictional wetlands by the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (CWA). The two waste stabilization lagoons and the cooling tower pond exhibit some of the functional attributes of created wetland systems by providing waterfowl and wildlife habitat and flood storage and attenuation, but are not wetlands. (BMDO, 2000, p. 2-3)

There are no natural wetlands at any of the RSL sites. Consequently, the U.S. Army Corps of Engineers has not identified any jurisdictional wetlands at any RSL sites. (BMDO, 2000, p. 2-3) According to the 2000 *Dismantlement or Destruction of Anti-Ballistic Missile Facilities*, no Federal endangered species have been observed at the SRMSC. However, the whooping crane could potentially fly over the sites during migration. No other federally listed threatened or endangered wildlife or plant species are known to occur at the SRMSC. (BMDO, 2000, p. 2-5) Based upon the habitat requirements for the two Federally-listed species, there is no nesting habitat for any of these listed birds on any of the SRMSC sites. Both of the listed birds could possibly fly over the area, since SRMSC is within the waterfowl migration area and each species, excluding the whooping crane, typically follows the migration to feed on injured or dead waterfowl. (BMDO, 2000, p. 2-5)

There are no State regulations governing threatened or endangered species. However, the state does maintain a list of species considered to be threatened or endangered. (BMDO, 2000, p. 2-5)

An asbestos survey was conducted at the MSR site in September 1995. (BMDO, 2000, p. 2-5) Many of the facilities contain ACM. Table 3.5.13 summarizes the location, approximate quantity, and surveyed condition of ACM in the facilities that would be dismantled or destroyed.

Table 3.5.15 Summary of ACM in SRMSC Tactical Facilities
(BMDO, 2000, p. 2-10)

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg 430 Missile Site Control Building	Black mastic (floor tile adhesive) Steel support caulking Conduit putty Vent putty Filter compound	37,817 sq. ft. 6,860 sq. ft. 5 sq. ft. 900 sq. ft. Unknown	Significantly damaged - NF Damaged - NF Undamaged - NF Undamaged - NF Damaged - NF
Bldg 445 Missile Site Control Building Power Plant	Elevator door gasket Thermal insulation Black mastic (floor tile adhesive) Gaskets Transite	30 sq. ft. 1,362 sq. ft. 4,700 sq. ft. 20 sq. ft. 20 Sq. ft	Damaged - F Significantly damaged - NF Significantly damaged - NF Damaged to Significantly damaged - NF Significantly damaged - NF
Spartan Launchers (30 each)	Transite	300 sq. ft. total all launchers	Damaged - NF
Sprint Launchers (70 each)	Electrical covering	2,100 sq. ft. total all launchers	Damaged - F
Bldg 455 Warhead Handling Building	Conduit putty	1 sq. ft.	Undamaged - NF
Bldg 456 Universal Missile Building	Black mastic (floor tile adhesive) Gaskets Roofing material	Unknown 20 sq. ft. 55 sq. ft.	Undamaged - NF Undamaged - NF Undamaged to damaged - NF
Bldg 460 Exclusive Entry Sentry Station	Pipe caulking Black mastic (floor tile adhesive)	1 sq. ft. 300 sq. ft.	Undamaged - F Undamaged - NF

Facility	ACM	Quantity	Condition Friable · F Non-Friable · NF
Bldg 401 Limited Area Sentry Station	Floor tile Transite Roofing material	2,260 sq. ft. 220 sq. ft. 20 sq. ft.	Undamaged - NF Undamaged - NF Undamaged - NF
Bldg 1110 Remote Launch Ops Bldg	Black mastic (floor tile adhesive) Gaskets	1,100 sq, ft. 8 sq. ft.	Undamaged - NF Undamaged - NF
Bldg 1101 Limited Area Sentry Station	Black mastic (floor tile adhesive)	1,075 sq. ft	Undamaged - NF
Bldg 2110 Remote Launch Ops Bldg	Black mastic (floor tile adhesive) Ceiling panel Gaskets	1,800 sq. ft. 120 sq. ft. 30 sq. ft..	Undamaged - NF Significantly damaged - F Significantly damaged - F
Bldg 2101 Limited Area Sentry Station	Black mastic (floor tile adhesive)	1,074 sq. ft.	Undamaged - NF
Bldg 3110 Remote Launch Ops Bldg	Gaskets Black mastic (floor tile adhesive) Conduit putty	50 sq. ft. 1,800 sq. ft. 1 SQ. ft.	Damaged - F Undamaged - NF Undamaged - NF
Bldg 3101 Limited Area Sentry Station	Black mastic (floor tile adhesive)	1,074 sq. ft.	Undamaged - NF
Bldg 4110 Remote Launch Ops Bldg	Ceiling panel Gaskets	1,300 sq. ft. 20 sq. ft.	Significantly damaged - F Undamaged to damaged - NF
Bldg 4101 Limited Area Sentry Station	Thermal pipe wrap Black mastic (floor tile adhesive)	20 sq. ft. 1,074 sq. ft	Significantly damaged -F Undamaged - NF

As of 2000, two MSR sites were part of the Army's active Installation Restoration Program (IRP). Site SRMSC007 (the abandoned fire response water storage pond site) contained groundwater with trichlorofluoromethane and trichloroethene. Site SRMSC 009 (the MSR electrical and signal vaults) contained water with TPH and metals. (BMDO, 2000, p. 2-5) These sites have been closed.

Another IRP site (SRMSC 005) was identified in April 1994 but deleted as an active IRP site in November 1997. SRMSC 005 is the flooded SPARTAN missile silos which have been tested and

the presence of chromium and cadmium contaminated groundwater confirmed in 1993. In 1997, SMDC determined that the contaminated water was not migrating out of the silos. Concurrence was obtained from the State "… with the understanding that if the US Army excessed the installation, the silos would have to be 'cleaned-up'" (MFR, 1998)

There are no permitted landfills on the SRMSC. Only the MSR site generates solid waste. The total amount of solid waste generated by the MSR site is less than 10 cubic yards per month which is disposed of through contracted services. (BMDO, 2000, p. 2-20)

3.5.16 *Final National Missile Defense Joint Program Office (NMD-JPO) Parcel-Specific Environmental Baseline Survey for Potential NMD Program Facilities.* March 2000 (NMDJPO, 2000)

Using the Categories described in the DoD's memorandum *Clarification of Uncontaminated Environmental Condition of Property at Base Realignment and Closure Installations* (dated October 21, 1996), the report's Executive Summary concluded that most of the MSR property could be classified as Category 1 with the following exception:

- Discharge of industrial wastewater had occurred to the southern cell of the lagoon, but contaminant concentrations are below action levels. This portion of the site was classified as Category 3 property. (NMDJPO, 2000, p. ES-2)

- The Fire Water Storage Pond (south of the Waste Stabilization Ponds) had filled in and is overgrown with vegetation. Volatile organic compounds were detected in the groundwater in this area in concentrations above action levels. Because no remediation had occurred, the pond was classified Category 6. (NMDJPO, 2000, p. ES-2)

- During the fall of 1999, a Southeast Debris Burial Site was discovered on subject property south of the former Fire Water Storage Pond at the MSR. Lead and other metals were detected in soils, but at concentrations below action levels. This area had been classified as Category 3 property. (NMDJPO, 2000, p. ES-2)

All of the properties at RSL-l, RSL-2, and RSL-4 were Category 1, except for the RLOBs at each of the RSLs. These areas were classified Category 3 property because of releases of water with contaminant concentrations below action levels. (NMDJPO, 2000, p. ES-2)

While the EBS concluded that there were no constraints to prevent property use, it suggested that if there was to be modifications to buildings and structures, that attention should be paid to lead paint and asbestos issues. (NMDJPO, 2000, p. ES-7)

3.5.17 *Final Supplement to the Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Preliminary Assessment,* June 2000. (USASMDC, 2000a)

The 2000 *Final Supplement to the Expanded Preliminary Assessment* identified two sites where materials from the construction, operation, or decommissioning of the SRMSC could be located. (USASMDC, 2000a, p. 16)

3.5.17.1 Potential Battery Burial Site

A former MSR worker provided anecdotal evidence of battery burial trenches in an area north of the Chapel on the MSR property. Historic aerial photographs taken during site construction indicate a staging area north of the Chapel. Based on this evidence, a geophysical survey was completed in September 1999. Several anomalies were observed, particularly along the southern edge of the grid, possibly indicating buried debris.

3.5.17.2 Southeast Debris Burial Site

The southeast portion of the MSR property was suspected of being used for construction debris burial. A reconnaissance-level geophysical survey was performed, and several anomalous areas were identified, indicating buried metallic objects to the south of the wastewater stabilization ponds. In addition, a soil boring constructed to the south of the former Fire Water Storage Pond encountered debris to a depth of 9.7 feet bgs. Samples were collected and found elevated levels of lead and other metals were detected in the sample collected at 7.5 feet bgs. (USASMDC, 2000, p. 12)

3.5.18 *National Missile Defense Deployment, Final Environmental Impact Statement.* December 2000. (USASMDC, 2000b)

This EIS examined the potential for impacts to the environment as a result of the potential deployment of a land-based National Missile Defense (NMD) system. The environment was analyzed in terms of 15 resource areas, including geology and soils, hazardous materials and hazardous waste, health and safety, utilities, and water resources. The EIS concluded that at the MSR property, there would be minimal impact to these areas of concern.

3.5.19 *Final Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Site Inspection,* December 2001. (USASMDC, 2001)

The 2001 *Final CERCLA Expanded Site Inspection* collected additional information on the following seven specific sites that were recommended for further investigation in the 1999 *Expanded Preliminary Assessment*. (USASMDC, 2001, p. 7-1-6)

3.5.19.1 Former Fire Water Storage Pond

According to 2001 *Final CERCLA Expanded Site Inspection,* in 1998 Ogden Environmental and Energy Services reported the detection of total petroleum hydrocarbons (TPH) in five of six soil samples, but no VOCs; trichlorofluoromethane (TCFM) and trichloroethene (TCE) was detected in three monitoring well samples, but there was no detection of BTEX or TPH. (USASMDC, 2001, p. 2-15)

The objective of the 2001 *Final CERCLA Expanded Site Inspection* was to define lateral extent of groundwater contamination (chiefly TCE) detected during previous investigations. Analytical results indicate TCE was confined to a very small area near the former Fire Water Storage Pond.

None of the groundwater samples from the new piezometers exhibited detectable concentrations of TCE. The soil boring advanced through the presumed center of the former Fire Water Storage Pond into bedrock (18 feet) indicated elevated concentrations of TPH near the surface, a detectable concentration of PCB, and traces of TCFM throughout the boring. Based on the results, the ESI recommended no further investigation or remedial action of groundwater associated with this site is warranted. (USASMDC, 2001, p. 7-1)

3.5.19.2 Roaring Nancy Creek

Roaring Nancy is an ephemeral creek that flows west through the MSR site.(USASMDC, 2001, p. 2-15) Sediment samples indicated fairly widespread TPH contamination in 4 of 13 samples. Lead was also detected in one sediment sample. This location also exhibited the highest TPH concentration. Based on the sediment results and the general healthy ecological condition of the Roaring Nancy Creek, the *Final CERCLA Expanded Site Inspection* suggested that intrusive remediation of the Roaring Nancy Creek would be more harmful to the environment than taking no action. (USASMDC, 2001, p. 7-2)

3.5.19.3 MSR Missile Field

Heavy metals and trace concentrations of VOCs were detected in most of the electrical and signal vaults and pull boxes associated with the missile field vaults and pull boxes. Vault water was pumped out during a dewatering operation in October 2000 in close coordination with NDDH under a temporary dewatering permit. The SPARTAN missile cell/silo containing the greatest apparent quantity of water was sampled for perchlorate analysis. No perchlorate ion was detected. One of the 16 SPRINT missile cells/silos contained sufficient water and the sample contained chromium and cadmium similar to the SPARTAN missile silos. Trace concentrations of VOCs were also detected. No perchlorate ion was detected.

Soil samples did not indicate any TAL metal analytes at concentrations greater than three times background. Though earlier unfiltered water samples contained chromium, cadmium, and lead (possibly due to the use of steel liners and/or metal-based paints) (USASMDC, 2001, p. 2-17), none of the groundwater samples collected in 2001 indicated chromium, cadmium, or other heavy metals. According to the 2001 *Final CERCLA Expanded SI*, the missile field should be considered for no further action under CERCLA. The water present in the cells/silos and vaults should be properly treated and/or disposed of prior to demolition or reactivation activities planned for the MSR. Similarly, the heavy metal present in the SPRINT missile cells/silos should be treated and/or disposed of before demolition. (USASMDC, 2001, p. 7-2)

3.5.19.4 Debris Landfill

Water quality results for the 2001 *Final CERCLA Expanded Site Inspection* indicated that VOCs, SVOCs, and PCBs were not detected either up-gradient or down-gradient of the closed debris landfill. (The "unpermitted landfill" was detected during the USACE-Omaha District's 1992 Environmental Compliance Assessment and noted at that time to contain construction debris (USASMDC, 2001, p. 2-10). TPH concentrations ranged from below detection limits (0.1 mg/L) to 0.250 mg/L. Arsenic, barium, chromium, and lead were detected below primary MCLs for drinking

water. Aluminum, iron, and manganese were detected above secondary MCLs. Based on this data, the Debris Landfill should be considered for no further action. (USASMDC, 2001, p. 7-3)

3.5.19.5 Southeast Debris Landfill

Water quality results indicate no VOC contamination above drinking water standards. No SVOCs or PCBs were detected in the groundwater samples collected with lead in one sample location exceeding the primary MCL. Additional survey revealed construction debris, elevated levels of metals in unfiltered groundwater samples, and petroleum and chlorinated solvent releases to subsurface soil. A geophysical survey was conducted in May 2001 and indicated eight anomalous areas. Extensive investigations of this area indicated the extensive burial of construction debris corresponding with the two larger geophysical anomalies. Soil sampling and analysis indicated some petroleum contamination, very low concentrations of several chlorinated and non-chlorinated hydrocarbons, and a few instances of heavy metals above background concentrations. This site should be registered with the State of North Dakota as a former construction landfill, and the groundwater should be continued to be monitored semi-annually for a 2-year period. The site should be considered for No Further Remedial Action Planned (Site Evaluation Accomplished) status. (USASMDC, 2001, p. 7-4)

3.5.19.6 Potential Battery Burial Pit

According to the 2001 *Final CERCLA Expanded Site Inspection*, in 1999 the SRMSC on-site manager received a report from a former MSR site worker suggesting the possible presence of battery burial trenches behind the MSR Chapel. Based on the aerial photograph, a Geonics EM-31 electromagnetic system was used to delineate areas of buried debris. Several anomalous zones were found on the Chapel grid. (USASMDC, 2001, p. 2-20)

The 2001 *Final CERCLA Expanded Site Inspection* was aimed at locating the reported burial pit. Five exploratory trenches were completed in suspected areas. Locations were selected based on the best evidence available that included anecdotal evidence, geophysical survey, and historical aerial photographs. No buried materials were encountered, and the ground appeared undisturbed. This suspected site could not be confirmed. (USASMDC, 2001, p. 7-5)

3.5.19.7 RSL Sites 1 through 4

The 2001 *Final CERCLA Expanded Site Inspection* of the RSL sites consisted of examining the SPRINT missile silos, the associated vaults, and conducting a detailed investigation of the wastewater lagoon at RSL-3. Since RSL-3 is maintained by the Army (sump pumps operate to keep the Remote Launch Operations Building (Bldg 3110) dry), it was selected as being representative of a worst-case scenario for the lagoon systems. Lagoon water samples exhibited no detectable VOCs, PCBs, or TPH. Metal concentrations were within normal ranges. Lagoon sediment samples contained no detectable amounts of VOCs, PCBs, or TPH. Metal concentrations were slightly elevated above background concentrations in two instances. None of the Sprint missile silos contained sufficient water to collect a sample for analysis. A distinct oily layer was observed in two of the electrical vaults. Metal analyses of water samples from RSL-1, RSL-2, and RSL-4 indicated elevated levels of several metals including cadmium, lead, and nickel. The SPRINT missile silos

and associated vaults apparently do not present a threat of release of hazardous materials in their current condition. Vault water was pumped out during a dewatering operation in October 2000. Dewatering activities were conducted in close coordination with the State of North Dakota under a temporary dewatering permit. "Based on these results, the RSL lagoons, silos, and vaults should be considered for no further action (Site Evaluation Accomplished)." (USASMDC, 2001, p. 7-5)

3.5.19.8 Miscellaneous

According to the 2001 *CERCLA Expanded Site Inspection*, in 1990 the Army obtained a temporary RCRA generator ID number (ND4210090086) and disposed of approximately 500 cubic yards of hazardous debris and sediment to RCRA permitted facilities. Approximately 1,250 cubic yards of nonhazardous debris were disposed offsite at local landfills. PCB equipment and PCB-contaminated equipment (transformers, radio frequency filters, lighting ballasts) and debris were disposed offsite at permitted facilities. Since 1995, the Army has been operating its periodic discharges from its wastewater stabilization lagoons at the MSR under a North Dakota Pollutant Discharge Elimination System (NDPDES) permit (ND-0026026). (USASMDC, 2001, p. 2-10)

According to the 2001 *CERCLA Expanded Site Inspection*, in 1975 the U.S. Army Environmental Hygiene Agency (now the US Army Center for Health Promotion and Preventative Medicine) reported that some industrial waste from wash racks was discharged to catch basins at the MSR site. The catch basins were connected to short storm sewers that eventually discharge to grade and eventually leave the site, in most instances via the Roaring Nancy Creek. Vehicle wash racks matching this description were located behind the industrial building on the south side of the MSR. (USASMDC, 2001, p 2-16)

3.5.20 ***Stanley R. Mickelsen Safeguard Complex Cultural Resources Management Plan.*** **Teledyne Solutions, Inc. for the U.S. Army Space and Missile Defense Command. April 2003. (USASMDC, 2003)**

The 2003 *Cultural Resources Management Plan* described how the MSR and RSL sites saw little or no use after closure. The non-tactical portion of the MSR was acquired by the General Services Administration (GSA) in 1977. The GSA made little provision for maintenance and repair for many of the buildings and as a result many of the structures were significantly damaged with some becoming irreparable. The Plan noted that all of the family housing units and many of the other non-tactical buildings have been removed. (USASMDC, 2003, p. 10)

4 CURRENT AND HISTORIC ADJACENT PROPERTIES LAND USE

This section contains information from several historic sources used to evaluate adjacent or adjoining properties to the MSR, and all four of the RSL sites. Depending on the source of information used, surrounding properties of environmental significance were searched up to about one mile from the subject sites. Specific search distances are discussed for each historic source in their respective sections.

4.1 SUMMARY OF OBSERVATIONS MADE DURING SITE RECONNAISSANCE

Visual observations of adjacent properties (from site boundaries and readily accessible public areas) are summarized below. In the four-county area where SRMSC is located, nearly 90 percent of the land is used for agriculture. The MSR facility is the only parcel located in close proximity to a residential area. The MSR is located 1 mile north from the community of Nekoma, a primarily residential settlement of approximately 60 citizens. (USASSMDC, 1995b, p. 8) The approximate minimum search distance for adjacent properties was within about 200 feet of the indicated subject site boundaries. The setting of all properties, as stated previously, was in rural population density. The properties discussed below are depicted on Figures 2-2 through 2-5 in Appendix A, and Figures H-1 through H-6 in Appendix H.

Photos 64 through 70 depict the agricultural land surrounding the MSR property. Photos 71 through 76 depict the agricultural land surrounding the RSL 1 property. Photos 77 through 79 depict the agricultural land surrounding the RSL 2 property. Photos 80 through 86 depict the agricultural land as well as the forests surrounding the RSL 3 property. Photos 87 through 92 depict the agricultural land surrounding the RSL 4 property. All photographs are found in Appendix G.

Table 4.1 Adjacent Properties of all Sites

Direction	Description
North	Adjacent property to the north of all subject sites is agricultural cropland.
Northwest	Adjacent property to the northwest of all subject sites is agricultural cropland.
West	Adjacent property to the west of all subject sites is agricultural cropland.
Southwest	Adjacent property to the southwest of all subject sites is agricultural cropland.
South	Adjacent property to the south of all subject sites is agricultural cropland.
Southeast	Adjacent property to the southeast of all subject sites is agricultural cropland.
East	Adjacent property to the east of all subject sites is agricultural cropland.
Northeast	Adjacent property to the northeast of all subject sites is agricultural cropland.

The adjacent properties listed in the above table do not appear to represent environmental issues for the subject site property.

4.2 HISTORICAL TOPOGRAPHIC MAPS

A request was made to Environmental Data Resources, Inc. (EDR) for current and historic USGS historical topographic maps with coverage of: Nekoma, Billings Lake, Alsen SE, Langdon West, Hanks Corner, Edmore, and Fairdale, North Dakota. A review of topographic maps from TerraServer and USACE library also occurred. The topographic maps that were obtained are summarized in Section 10. A copy of the topographical maps is included in Appendix H. The maps were reviewed to identify environmental issues in connection with surrounding property land use up to one mile beyond the subject site property.

Obvious indications of adjacent property use or features that could be indicative of environmental issues were not apparent from the review of the topographic maps.

4.3 HISTORICAL AERIAL PHOTOGRAPHS

Historical aerial photographs for the area surrounding the subject properties were reviewed to identify environmental issues in connection with surrounding property land use to about 300 feet beyond the subject site properties. Copies of historical aerial photographs containing coverage of the sites and surrounding areas are provided in Appendix A.

In general, land surrounding all of the properties has been depicted as agricultural cropland and farmsteads since 1963 (for the RSL sites) and 1970 (for the MSR property). These activities did not appear to represent obvious environmental issues.

4.4 HISTORICAL FIRE INSURANCE MAPS

In the late nineteenth century, the Sanborn Company and other companies began preparing maps of central business districts for use by fire insurance companies. These maps were updated and expanded geographically and periodically through the twentieth century. Historic fire insurance maps were prepared for developed areas of cities and towns as a resource to assist insurance companies in evaluating risk for insurability of buildings and structures. The fire insurance maps often indicate building use, construction materials of specific building structures, and the location of gasoline storage tanks. Historical fire insurance maps produced by the Sanborn Map Company were requested from EDR, Inc. to evaluate past uses of the sites. EDR certified "… that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information [for the MSR property and the four RSL sites], and fire insurance maps covering the target property were not found."

5 REVIEW OF REGULATORY INFORMATION

A component of the ECP is the review of all reasonably obtainable federal, state, and local government records for the sites and surrounding properties where there has been a release or likely release of any hazardous substance or any petroleum product, and which is likely to cause or contribute to a release or threatened release of any hazardous substance or any petroleum product on the Federal real property. A regulatory database summary was acquired from EDR on October 27, 2009. The regulatory database summary consolidates standard federal, state, local, and tribal environmental record sources based on ASTM D 6008-96 (2005) recommended minimum search distances from the sites. A copy of the complete EDR report is included in Appendix E.

5.1 FEDERAL, STATE, AND TRIBAL ENVIRONMENTAL RECORDS

Listed in Table 5.1 are a summary of the types and numbers of regulated facilities identified on federal, state, and tribal databases within the indicated search areas from the EDR report. Database definitions, descriptions, and the database search report are included in Appendix G.

Table 5.1 Federal, State, and Tribal Databases

Database	Description	Search Radius (Miles)	Number of Identified Facilities
Federal ASTM Databases			
NPL	The National Priorities List (NPL) is the USEPA's database of uncontrolled or abandoned hazardous waste facilities that have been listed for priority remedial actions under the Superfund Program	1.0	0
CERCLIS	The CERCLIS database is a compilation of facilities which the USEPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. NFRAP (No Further Remedial Action Planned) refers to facilities that have been removed and archived from the inventory.	0.5	0
RCRA CORRACTS/ TSD	The USEPA maintains a database of RCRA facilities associated with treatment, storage, and disposal (TSD) of hazardous materials that are undergoing "corrective action". A "corrective action" order is issued when there has been a release of hazardous waste or constituents into the environment from a RCRA facility.	1.0	0

Database	Description	Search Radius (Miles)	Number of Identified Facilities
RCRA Non-CORRACTS/ TSD	The RCRA Non-CORRACTS/TSD Database is a compilation by the USEPA of facilities that report storage, transportation, treatment, or disposal of hazardous waste. Unlike the RCRA CORRACTS/TSD database, the RCRA Non-CORRACTS/TSD database does not include RCRA facilities where corrective action is required.	0.5	0
RCRA Generators	The Resource Conservation and Recovery Act (RCRA) Generators database, maintained by the USEPA, lists facilities that generate hazardous waste as part of their normal business practices. Generators are listed as large, small, or conditionally exempt. Large quantity generators (LQG) produce at least 1000 kg/month of non-acute hazardous waste or 1 kg/month of acute hazardous waste. Small quantity generators (SQG) produce 100-1000 kg/month of non-acute hazardous waste. Conditionally exempt small quantity generators (CESQG) are those that generate less than 100 kg/month of non-acute hazardous waste.	0.25	0
ERNS	The Emergency Response Notification System (ERNS) is a listing compiled by the USEPA on reported releases of petroleum and hazardous substances to the air, soil, and/or water.	sites	0
State and Tribal ASTM Databases			
NPL and CERCLIS	The State of North Dakota does not maintain a regulatory database of state or tribal equivalent of hazardous waste sites.	N/A	N/A
SWLF/LF	The North Dakota Department of Health (NDDH) maintains a database of solid waste landfills and special use landfills located within the state of North Dakota.	0.5	0
LUST and Indian LUST	The NDDH maintains a database of the Leaking Underground Storage Tank (LUST) sites within the state of North Dakota and on tribal lands.	0.5	0
UST/AST	The NDDH has compiled a list of registered Underground Storage Tanks (UST) and Above Ground Storage Tanks (AST) within the state of North Dakota and on tribal lands.	site	0

No regulated facilities were listed that are located either on the subject sites, located up-gradient relative to the subject site with respect to topography and presumed groundwater flow direction, or

located in close enough proximity (regardless of being up-gradient) that there may be a potential for impact to the subject site.

5.2 UNMAPPED SITES

The EDR regulatory database report listed six (6) unmapped sites: two at the MSR property (EDR, 2009a, p. 5), one at the RSL 1 site (EDR, 2009b, p. 5), three at the RSL 2 site (EDR, 2009c, p. 5), the identical three at the RSL 3 site (EDR, 2009d, p. 5), and none at the RSL 4 property (EDR, 2009e, p. 5). Unmapped sites are those with insufficient address or location information to evaluate the facility listing locations relative to the subject site. These sites have been identified as within the zip code of the target property. To the extent possible, attempts were made to locate these sites and assess their relevance to the subject sites. The locations of all orphaned sites were identified and mapped utilizing mapquest.com. None of the orphaned sites are located within the corresponding ASTM search radius distance.

5.3 STATE AGENCY INQUIRY

During the October 2009 Site Reconnaissance, Team members interviewed Mr. Curt Erickson, Hazardous Waste regulator, North Dakota Department of Health, to inquire about historical knowledge of SRMSC activities which might lend themselves to environmental issues for the subject sites. Mr. Erickson reported that he has been attempting to have the groundwater that has infiltrated into the SPARTAN missile silos tested, removed, treated, and properly disposed of in accordance with State regulations since the groundwater was tested and confirmed to contain heavy metals. In 2000 and again in 2006, Mr. Erickson contacted the SMDC and the BRAC office at Rock Island (respectively) to obtain some action on this issue, and he feels frustrated that no action has been forthcoming.

In a similar manner, Mr. Erickson expressed his opinion that he would like to see the ethylene glycol that remains in the heat sinks at each of the RSL sites removed prior to excessing the facility. He would also like the residual fluid in the MSR heat sink tested for glycol content and dealt with accordingly.

A record of the interview with Mr. Erickson is located in Appendix D.

6 SITE INVESTIGATION AND REVIEW OF HAZARDS

Findings documented in the following subsections are based on the October 10-12, 2009 Site Reconnaissance and visual inspection of buildings and structures on the MSR property and the four RSL sites, a review of available Site records, and information obtained from the Site Manager as well as SMDC personnel.

6.1 ABOVEGROUND STORAGE TANKS

A visual inspection was undertaken to locate any ASTs on the Site. Based on a visual inspection and an interview with the Site Manager, two skid-mounted ASTs were identified as property of Double H Contracting and located to the east of the Industrial Building (Appendix G, Photo 93). While there is a historical record of ASTs at the Fueling Building when SRMSC was active, these ASTs were removed when the USTs were removed in the early 1990s. There is no historical information about past AST Contractor use at the Site.

A visual inspection was undertaken to locate ASTs on properties adjacent to the MSR property and two Contractor-owned ASTs were found east of the Industrial Building. No ASTs were noted on adjacent properties.

6.2 ASBESTOS CONTAINING MATERIAL

An Asbestos Survey Report and Asbestos Management Plan for the MSR were implemented on September 18, 1995. Facilities on the MSR property and RSL sites were surveyed in September 1991, October 1991, and September 1995 for asbestos-containing material. A total of 58 buildings were inspected, with 428 samples obtained. The majority of positive materials identified for asbestos were floor tiles. Additional items that contained asbestos include linoleum, transite panels, ceiling panels, wall panels, roofing material, caulk, conduit putty, and gaskets. Facilities that are to be renovated or demolished should be surveyed for asbestos-containing material prior to construction activities, and remediated when necessary. (USASMDC, 2000b, p. 3-219) During the Site Reconnaissance, a bundled theater curtain was found lying on the floor in the former Community Center and another curtain was found hanging in the theater. See Appendix G, Photo 94. Curtains could contain asbestos and must be tested prior to disposal. Historically, electrical wire insulation of this time period contained asbestos and electrical wires have not been tested during any of the previous sampling efforts. Electrical wire insulation could contain asbestos and must be tested prior to disposal.

6.3 HYDRAULIC EQUIPMENT

According to the 1999 *Final-CERCLA Expanded P*A, the hydraulic fluid from the MSR Service Station lift was tested for PCBs in 1993. None were detected. The Service Station was demolished in 1997. The oil/water separator was removed along with the hydraulic lift when the building was

demolished. The Industrial Building contained a hydraulic lift so it can be presumed that vehicles were maintained in the building, but the hydraulic lift has been made inoperable (Appendix G, Photo 95) and the hydraulic fluid drained by direction of the Site Manager. The hydraulic fluid from the lift was tested for PCBs in 1993. None were detected. The Industrial Building also has an oil/water separator that has not been used in 15 years or more. (USASMDC, 1999b, p. 3-27)

6.4 INVENTORY OF CHEMICALS / HAZARDOUS SUBSTANCES

According to the 2000 NMDJPO EIS, the facilities on the MSR property and the activities related to the RSL sites "… do not store hazardous substances in large enough quantities to require a USEPA notification." (NMDJPO, 2000, p. 16) The only materials that were observed during the 2009 Site Reconnaissance are those chemicals associated with vehicle and facility maintenance activities, and janitorial services. Janitorial chemicals and building maintenance-related products were noted as being stored in the designated storage area within the janitorial closet located in the administration building. Vehicle maintenance products and small amounts of petroleum, oil, and lubricant (POL) products were also stored in designated areas within the Industrial Building and the Polar Building. During the Site Reconnaissance, one room was found in the Industrial Building which indicated a spill (Appendix G, Photo 96). This was brought to the attention of the Site Manager who said that the problem would be promptly addressed.

6.5 LEAD-BASED PAINT

Since MSR and RSL site facilities were constructed before 1980, there is the potential that most buildings and silos may contain lead based paint. (USASMDC, 2000b, p. 3-221)

6.6 MUNITIONS AND EXPLOSIVES OF CONCERN (MEC)

No indication of munitions and explosives of concern were observed or reported by facility personnel during the Site visit in October 2009. Locked storage/arms vaults were identified in the LASS buildings at the MSR as well as in the LASS buildings at RSL 2 and RSL 3. When operational, the vaults were only accessible by authorized personnel. Only small quantities of small arms ammunition were stored in the arms vaults. The munition constituent (MC) lead may still be present in the firearm discharge drums (Appendix G, Photo 97). These drums were used when the RSL sites were operational by Security Police to clear weapons prior to entry into the RLOB.

During Safeguard Complex activities, SPRINT and SPARTAN missiles components were delivered to the Universal Missile Building (Bldg 455) where initial preparation of missile sections occurred with the unpacking, assembly, and checkout of SPARTAN and SPRINT missile components (HAER, 1996b, ND-9-C, p.1). Once missiles were assembled, they were delivered to their respective launch cells and then sealed beneath explosively fragmented cell covers. (HAER, 1996b, ND-9, p.57) Unlike the SPARTAN missile, the SPRINT was launch using an electrically-fired launch-eject gas generator. (USABMDSC, 1975, p. 9-4)

All missiles were removed from the MSR facility between December 1975 and September 1977, and the silos were sealed in accordance with the Strategic Arms Limitation Talks agreement. (USASMDC, 1999b, p. 3-1) By 1977 all SPARTAN missiles had been removed from the four RSL silo launchers, the all silos were sealed, and the Remote Launch Operations Buildings (RLOBs) salvaged and sealed as part of the SRMSC deactivation phase. At this point, the RLOBs were essentially "abandoned in place." (HAER, 1996b, ND-9-V, p.4)

The MSR site did not have facilities for test firing rocket motors, nor is there any evidence of a rocket motor ever being fired at the SRMSC. (USASMDC, 1999b, p. 3-15) Though no written records were located to demonstrate that electro-explosive devices had been removed from SPARTAN and SPRINT launch cells, site personnel indicated that no MEC, including unexploded ordnance, were present at either the MSR launch cells or the RSL site launch cells.

According to the HAER, Vol 2 (HAER, 1996b, ND-9-B) some additional alteration to the Missile Site Control Building's interior may have occurred during a testing phase in 1977. On 9 November 1976, word was received from the Safeguard Project Office to retain certain items at the MSCB to support Federal Aviation Agency (FAA) and Defense Nuclear Agency (DNA) explosive testing. It was stated that, "after testing, exterior damage to the facilities will be repaired and the facilities restored to a weather-tight secure condition," but added, "interior damage need not be repaired." (p. 7) The DNA performed the explosive tests for the FAA during July. They were considered successful in developing criteria for hardening baggage storage and locker areas of airport terminals to contain the explosive effects of small expedient bombs. The extent of any interior damage to the MSCB has not been determined. (p. 7)

During the 2009 Site Reconnaissance, the Site Manager disputed this information and related how this explosives testing had actually occurred in the garage of the LASS building at the RSL 4 site. Access to that building was not possible because of wood fastened over the doors. (Appendix D, Interviews)

6.7 NEARBY PROPERTIES

According to the EDR report (Appendix E) no leaking underground storage tanks were identified at the nearby properties.

6.8 OIL/WATER SEPARATOR

According to the 1999 *Final-CERCLA Expanded P*A, the MSR Service Station oil/water separator was removed along with the hydraulic lift when the building was demolished in 1977. The Industrial Building also has an oil/water separator that has not been used in 15 years or more. (USASMDC, 1999b, p. 3-27)

6.9 PITS, SUMPS, DRYWELLS, AND CATCH BASINS

No visual or physical evidence of pits or drywells were discovered on the Site. Sumps were identified in the MSR area that pumps water to the lift station near Roaring Nancy Creek. The Sumps in all except RSL 3 have been sealed.

No stormwater catch basins were identified during the Site visit.

6.10 PCB CONTAINING TRANSFORMERS

All remaining pad-mounted, electrical transformer units located on Site are identified with "Non-PCB" stickers. According to the 2000 *NMD Deployment Final EIS*, 74 transformers were identified in a 1990 PCB survey at the MSR and RSL sites. Of the 74 transformers identified and tested, only 7 indicated the presence of PCBs. All known transformers and other items containing PCBs were removed from the MSR site. (USASMDC, 2000b, p. 3-221) The 2009 Site Reconnaissance inspected all transformers and found that all had been labeled as "non-PCB."

6.11 PCB CONTAINING EQUIPMENT

According to the 2000 *NMD Deployment Final EIS*, a 1993 inspection of the MSR site identified 37 potentially PCB containing equipment. However, it was judged unlikely that any of the items contained regulated levels of PCBs. (USASMDC, 2000b, p. 3-221)

6.12 PESTICIDES / HERBICIDES

According to the site manager and reported in the 2000 *NMD Deployment Final EIS*, the MSR site does not use any insecticides or pesticides. Herbicides have been used periodically to control weed growth in pavements and for spot control of noxious weeds such as leafy spurge (a noxious weed). Herbicides that have been used in the past include 2-4D Amine, Banvel, and Promoton. (USASMDC, 2000b, p. 3-221) According to the Site Manager, Round-Up is currently used to control weeds around the fences.

6.13 RADIOACTIVE MATERIAL

The Spartan missile silos, the Universal Missile Building (455), and the Warhead Handling Building (456), were all tested in 1993 and 1998 for residual radioactivity after deactivation of these facilities and the removal of all missiles and warheads. No radioactivity other than naturally occurring radionuclides was detected (USASMDC, 1999b, pp. 3-15 & 16).

6.14 RADON

According to Radon Potential of the Upper Midwest map by the U.S. Geological Survey (1993), all of North Dakota is classified as an area of high radon concentration level. A radon survey completed for the MSR found Building 348, now demolished, and Building 360 to have radon levels above 4 picocuries per liter. All other facilities surveyed were below 4 picocuries per liter (USASMDC, 2000b, p. 3-221)

6.15 UNDERGROUND STORAGE TANKS

According to the 2000 *NMD Deployment Final EIS*, between June and September 1991, the EPIC Company completed underground storage tank closures at the MSR. All but one petroleum underground storage tank underwent closure according to North Dakota requirements in place at the time of removal. One 70,000-gallon concrete underground storage tank located adjacent to the MSRPP was closed in place. (USASMDC, 2000b, p. 3-219)

6.16 WASTE DISPOSAL ACTIVITIES

The MSR property is in caretaker status, and little or no hazardous waste is being generated. Any hazardous waste generated as part of maintenance activities is disposed of offsite in accordance with applicable regulations. (USASMDC, 2000b, p. 3-219) No signs of landfills were observed during the 2009 Site Reconnaissance.

In the early to mid 1990s, the streets, gutter, and pavement from the two military housing areas - one constructed at the west end of the MSR property and the other planned for the north center area of the Non-Tactical Support Area - were removed. Concrete that was not used for rip-rap on the waste stabilization lagoon and asphalt were dumped in the area of Avenue E and Circle Drive in the north center area of the Non-Tactical Support Area (Appendix G, Photos 37 and 38).

SPARTAN missile cells/silos contain groundwater that has infiltrated into the cells/silos. This water has been sampled and determined to contain chromium and other heavy metals. According to the State's regulator, the water that has collected in the cells/silos is considered hazardous waste and must be disposed of in accordance with appropriate Federal and State regulations.

The Missile Site Radar Control Building (MSCB) (Bldg 430) and the Missile Site Radar Power Plant (MSRPP) (Bldg 440) have flooded with groundwater. In the early 1990s water was pumped from these two buildings and treated for PCB contamination prior to disposal. All PCB containing items were removed from the buildings at that time. However, water has continued to infiltrate and fill some of the excavated parts of the buildings. This water should be tested prior to disposal to determine if it will be considered hazardous waste by the State.

When the streets, gutters, and pavement were removed from the housing areas in the mid 1990s, the concrete material that was not used for rip-rap around the Waste Stabilization Ponds (Structure 385)

as well as the asphalt was deposited in the north-center part of the Non-Technical Area. The pile is uncovered and exposed to the elements.

In 1995-1996, it was determined that water from the sump in the basement of former Enlisted Mens' Dining Facility (Bldg S-348) was overwhelming the wastewater disposal system. It was decided at that time to seal the sump and to collapse the building's first floor into the basement, bury the debris and then re-grade the surface.

At the MSR property and at each of the four RSL sites, there are underground Heat Sinks that were designed to prevent overheating of electrical or environmental-control equipment in the MSCB, the MSRPP (in the MSR property) the RLOBs (at the RSL sites). Each Heat Sink contained a mixture of water and ethylene glycol. These mixtures in the RSL Heat Sinks have been tested and there remains residual ethylene glycol in each tank. The MSCB Heat Sink has not been sampled but could be similar to the mixture at each of the RSLs.

6.17 WASH RACK / GREASE RACK (INDUSTRIAL BLDG)

According to the 1999 *Final-CERCLA Expanded P*A, there is also reference to an outdoor wash rack near the Industrial Building in the 1975 *USAEHA Water Quality Engineering Study*. (USASMDC, 1999b, p. 3-27) During the 2009 Site Reconnaissance, the area around the wash rack was inspected (Appendix G, Photo 98). Water was visible in the wash rack's sump during the October 2009 Site Reconnaissance, but the depth to the water's surface made it difficult to confirm if there was a sheen on the water's surface.

7 REVIEW OF SPECIAL SOURCES

7.1 LAND USE

Figure 2-6 in Appendix A provides a 1998 aerial photograph of the MSR property and surrounding properties and depicts current conditions to the area. The MSR property is located in Cavalier County, North Dakota, just north of Nekoma, North Dakota. The MSR property as well as all of the RSL sites is located in an agricultural land use area.

The MSR property's Tactical area primarily functioned as an administrative, logistical, and missile control center. The Non-Tactical area included housing and recreational facilities with limited maintenance of military vehicles occurring in the Industrial Building. The MSR property was historically used from October 1975 to February 1976 when it was deactivated. After that, the property was held for about 4 years by the Department of Interior and used as a Youth Training Center. Since that time, MSR property and the four RSL sites have been in a caretaker status.

7.2 WETLANDS

The 1992 *Natural Resources Management Plan* identified eight wetland areas on the MSR site. Three of these are naturally occurring, and five have developed in excavated lagoons and drainage ditches. The MSR lagoon wetlands are probably not jurisdictional wetlands under Section 404 of the Clean Water Act, but the wetlands in the excavated drainage swales are potentially jurisdictional. (USASDC, 1992b, p. 3-2) Palustrine emergent wetlands had become established in all waste stabilization lagoons at the eastern RSL sites. (USASDC, 1992b, pp. 3-4-6)

7.3 100-YEAR FLOODPLAIN

According to the current Site Manager, the MSR property and RSL sites are not within a 100-year floodplain. (USASMDC, 2000b, p. 3-415)

7.4 CULTURAL RESOURCES

In 1996, US Army SMDC completed a Historic American Engineering Record (HAER) of all SRMSC facilities that are National Register of Historic Places (NRHP)-eligible, including the MSR property and all four of the RSL sites. HAER documentation includes a photographic, architectural, and historical recordation preserved in an archival form and typically serves as mitigation for unavoidable impacts to historic buildings and structures. The National Park Service has approved the SRMSC HAER documentation. (USASMDC, 1999a, p. 3-151)

8 CONCLUSIONS

The US Army Corps of Engineers (USACE), Omaha District (NWO) was contracted to prepare an Environmental Condition of Property (ECP) report for the Stanley R. Mickelsen Safeguard Complex, Nekoma, North Dakota. The Missile Site Radar property is somewhat rectangular in shape and encompasses approximately 432 acres; each of the four Remote SPRINT Launch (RSL) sites is rectangular and encompasses between 36 and 49 acres.

The Stanley R. Mickelsen Safeguard Complex (SRMSC) is currently unoccupied and is in caretaker status. The SRMSC has been in either DoD or DOI ownership since the United States Government acquired the Site in the early 1970s. The United States of America currently owns the land and the buildings.

Findings of this ECP are based on interviews, existing environmental information, including visual observations, Site records, Federal, State, and Local database and file information, related to the storage, release, treatment, or disposal of hazardous substances or petroleum products or derivatives on the Site. The following paragraphs present the findings related to areas of potential environmental concern that were evaluated during the ECP process.

8.1 ASBESTOS CONTAINING MATERIALS

In October 1991, Environmental Protection Inspection and Consulting, Inc. (EPIC) and AJT & Associates identified ACM in 10 buildings at the MSR property. Friable ACMs were identified in 7 buildings (paper pipe thermal insulation, mud fittings, joint compound, and wallboard). During November 1991, EPIC inspected a total of 17 buildings and 46 samples were obtained. The following buildings are still standing at the MSR property and may yet contain asbestos as shown on Table 3.5.4: Base Chapel (Bldg 340), Gymnasium (Bldg 346), Community Center (Bldg 350), Administrative Headquarters (Bldg 360), Industrial Building (Bldg 364), Telephone Exchange / Polar Bldg (Bldg 371), and MSR LASS Security Police Building (Bldg 401).

In 1995, Teledyne Brown Engineering (TBE) inspected 20 buildings at the MSR property, the RSL sites, and a SPRINT missile cell/silo. Asbestos containing materials (ACMs) were identified in 13 buildings and structures at the MRS and 8 buildings at the four RSL sites. TBE also completed an Asbestos Management Plan at the same time. The following buildings are still standing at the MSR property and the four RSL sites and may yet contain asbestos as shown on Table 3.5.12: Pump House (Bldg 369), Missile Site Control Building (Bldg 430), Missile Site Radar Power Plant (Bldg 445), Universal Missile Building (Bldg 455), Warhead Handling Building (Bldg 456), Exclusion Area Sentry Station (Bldg 460), Electrical Distribution Center, East (Bldg 463), Launch Area Utility Tunnel (Bldg 470), Terminal Structure "A" (Bldg 471), Terminal Structure "B" (Bldg 472), Limited Area Sentry Station (Bldg 1101), Remote Launch Ops Building (Bldg 1110), Limited Area Sentry Station (Bldg 2101), Remote Launch Ops Building (Bldg 2110), Limited Area Sentry Station (Bldg 3101), Remote Launch Ops Building (Bldg 3110), Limited Area Sentry Station (Bldg 4101), Remote Launch Ops Building (Bldg 4110), and SPRINT Missile Cells/Silos.

8.2 HAZARDOUS SUBSTANCES

Chemicals containing CERCLA hazardous substances would have been used and stored at the MSR property (no maintenance was accomplished at any of the four RSL sites) in amounts necessary to support unit-level vehicle and building maintenance activities. However, the quantities stored would not have exceeded corresponding CERCLA reportable quantities. There is no evidence that hazardous substances in excess of reportable quantities were release or disposed at the Site.

According to the USACHPPM 1994 *Preliminary Assessment*, seven sites at SRMSC could have released hazardous substances to the surrounding environment: the flooded SPARTAN missile silo; the Warhead Handling Building (WHB); the Universal Missile Building (UMB); the former Missile Site Radar (MSR) construction material disposal site; the MSR wastewater ponds; the Missile Site Control Building (MSCB) fire water storage pond; and the MSR Power Plant pipe tunnel.

Based on the results of the 2001 *Final CERCLA Expanded Site Inspection*, the ESI recommended that the water present in the flooded SPARTAN Missile silos and vaults should be properly treated and/or disposed of prior to demolition or reactivation activities planned for the MSR property; that no further investigation or remedial action of groundwater associated with the Fire Water Storage Pond to be warranted; and that no further investigation or remedial action of groundwater associated with the Construction Material Disposal Site is warranted.

During the 2009 Site Reconnaissance, a debris pile containing the remains of former roads (primarily asphalt and concrete) was noted at the north boundary of the Non-Tactical Area (Appendix G, Photo 99). The State of North Dakota classifies this material as "inert waste."

8.3 LEAD-BASED PAINT

A LBP survey has not been conducted for the buildings or structures at either the MSR or RS sites. Based on the construction date of the buildings (the early to mid-1970s), it is presumed that lead based paint exists in the structures. During the October 2009 Site reconnaissance, painted surfaces within the aboveground structures appeared in satisfactory condition, while paint exposed to moisture in the MSCB, MSRPP, and the RLOBs was severely deteriorated.

8.4 MUNITIONS AND EXPLOSIVES OF CONCERN

No indications were found during the October 2009 Site reconnaissance or records review process of the past presence of MEC, including unexploded ordnance. Historical records suggest that small quantities of small arms ammunition are stored in the arms vaults in various buildings. The munition constituent (MC) lead may still be present in the firearm discharge drums (Appendix G, Photo 97). These drums were used when the RSL sites were operational by Security Police to clear weapons prior to entry into the RLOB.

8.5 NEARBY PROPERTIES

Properties surrounding the MSR property as well as the four RSL sites are agricultural. No release from the adjacent land is expected to impact the MSR property or the four RSL sites.

8.6 OIL/WATER SEPARATORS

According to NMD JPO EBS (NMDJPO, 2000), "[t]here is only one oil/water separator present on the subject properties. The Industrial Building (364) contains an oil/water separator that has not been used in 15 years (USASMDC, 1999a)." (p. 19)

8.7 PETROLEUM PRODUCT STORAGE

There are two Contractor-owned metal 500-gallon aboveground storage tanks on the east side of the Industrial Building. Each tank is equipped with secondary containment and appeared in good condition at the time of the 2009 Site reconnaissance. Chemicals reported to be stored in the Industrial Building typically include: containers of fuel, motor oil, brake fluid, gear oil, lubrication oil, flux paste, silicone compound, multipurpose grease, aerosol spray paints, as well as other typical vehicle maintenance fluids. No violations were noted in the EDR report with regard to the MSR property's management of petroleum products. Based on a visual inspection, it appeared that petroleum products are being handled properly at the MSR property and the storage of these relatively small quantities (no quantities greater than 55-gallons) does not appear to pose an environmental risk at the MSR property.

8.8 PCB EQUIPMENT

The 1994 *Site Investigation and Analysis* identified 37 potential PCB items but none of these items were positively identified as containing regulated levels of PCBs. (USASSDC, 1994, p. 4-8) Based on visual and document research, ETC concluded that the following 21 items contain regulated levels of PCBs: 16 GE capacitors; one ITE dry transformer; and 4 Sta-Rite transformers. (USASSDC, 1994, p. 4-8) ETC also concluded that it was unlikely that 14 other items (including 2 AC generators, one generator set, 2 motor generators, 8 Sta-Rite transformers and one GE transformer) contain regulated levels of PCBs. (USASSDC, 1994, p. 4-8)

8.9 PCB TRANSFORMERS

All remaining pad-mounted, electrical transformer units located on MSR property and the RSL sites are identified with "Non-PCB" stickers. According to the 2000 *NMD Deployment Final EIS*, 74 transformers were identified in a 1990 PCB survey at the MSR and RSL sites. Of the 74 transformers identified and tested, only 7 indicated the presence of PCBs. All known transformers and other items containing PCBs were removed from the MSR site.

8.10 RADIOLOGICAL MATERIALS

According to the 1999 *Final CERCLA expanded Preliminary Assessment,* the Spartan missile silos, the Universal Missile Building (455), and the Warhead Handling Building (456), were all tested in 1993 and 1998 for residual radioactivity after deactivation of these facilities and the removal of all missiles and warheads. No radioactivity other than naturally occurring radionuclides was detected (USASMDC, 1999b, pp. 3-15 & 16).

8.11 RADON

A site specific radon survey was conducted for the MSR property between April 1993 and July 1993. Radon levels ranged from 0.30 to 7.5 picoCuries per liter of air (pCi/L). Only two areas had elevated radon: the Enlisted Mens' Dining Hall basement (7.5 pCi/L) and the Headquarters Building basement (4.4 pCi/L). The Dining Hall basement has been filled and there are no occupants in the basement of the Headquarters Building. All other readings were below the United States Environmental Protection Agency (USEPA) recommended action level of 4 pCi/L. United States Geological Survey (USGS)

8.12 UNDERGROUND & ABOVEGROUND STORAGE TANKS

Between June and September 1991, the EPIC Company, under contract to the U.S. Army Corps of Engineers, completed underground storage tank closures at the Missile Site Radar. All but one petroleum underground storage tank underwent closure (18 steel and fiberglass USTs) according to North Dakota requirements in place at the time of removal. One 70,000-gallon concrete underground storage tank located adjacent to the Missile Site Radar Power Plant was closed in place. (USASMDC, 2000b, p. 3-219)

8.13 WASH RACK / GREASE RACK (VEHICLE MAINTENANCE FACILITY)

According to the 1999 *Final-CERCLA Expanded P*A, there is also reference to an outdoor wash rack near the Industrial Building in the 1975 *USAEHA Water Quality Engineering Study*. (USASMDC, 1999b, p. 3-27) During the 2009 Site Reconnaissance, the area around the wash rack was inspected (Appendix G, Photo 98). Water was found in the wash tack sump. It was determined from drawings that the wash rack was connected to the storm sewer ditch.

9 LIMITATIONS

This ECP Report was prepared to review certain elements of the environmental condition of property related to the storage, release, treatment, or disposal of hazardous substances or petroleum products. It documents efforts to determine or discover the presence or likely presence of a release or threatened release of these materials. Project activities were performed in general conformance with the ASTM D 5746 – 98 (2002) and D 6008 - 96 (Reapproved 2005) guidance, the project prescribed scope of work, and generally accepted practices in the consulting industry. The degree of care and skill is consistent with that generally exercised in the industry under similar conditions.

The USACE-NWO team has relied on certain information provided by the US Army Space and Missile Defense Command and other parties referenced in the report. This information was assumed to be accurate and complete unless information to the contrary arose during the course of the investigation. Historic documentation (e.g., information on past environmental practices, environmental records, US Army operational changes, chemical/substance inventories and storage, current as-built drawings, etc.) and facility personnel knowledge regarding chemicals used or stored on the SRMSC and the quantities stored, was often limited or non-existent. Therefore, statements regarding storage of chemicals or presence of hazardous substances reflect best available data and are not warranted for either completeness or accuracy over the history of the facility.

In preparing this report, the USACE-NWO team was required to review previous documents from other sources. These documents may present findings regarding the abatement or remediation of *known* concerns at the time of their preparation or within the limit of the project scope of work. These documents may include statements or opinions of the original authors of the documents as to the satisfactory completion of work. The USACE-NWO team notes that environmental laws and regulations, including abatement or remedial action levels, are periodically reviewed and updated by the various regulatory agencies and may have changed since the respective dates of theses documents.

The USACE-NWO team has summarized certain of these documents. This summarization may include statements or opinions as to the satisfactory completion of work. These statements or opinions are those of the original report authors. The USACE-NWO team neither warrants nor certifies the accuracy or completeness of these statements. The summarization of previous documents has not reviewed or updated those conclusions with regards to actions from the time of that document to date, current regulatory agency abatement, or remedial standards. Rather, this summary provides the original author's conclusions at the time the report was prepared. Evaluation of the completeness of previous documents or statements of abatement or remediation is beyond the current scope of service included in this contract.

A Site reconnaissance was performed in October 2009 to visually identify materials or conditions representing recognized adverse environmental conditions. Identification of hidden conditions, observation of the effects of activities or incidents occurring after completion of the reconnaissance, buried conditions, conditions obscured by dense foliage, conditions beneath buildings, other structures, or covered by building/paving materials, or conditions otherwise obscured, is beyond the

scope of this work. The conditions described in this report are valid only at the time that the observations were made.

Some conditions may change with time. The findings and conclusions contained in this report are based in part on the information available at the time of the study. The findings and conclusions should be considered not as scientific certainties, but as probabilities based on professional judgment of the significance of the limited data gathered in the course of the review of historical information, interviews and literature review. If additional or corrected information becomes available, the USACE-NWO team requests the opportunity to review/modify conclusions, as warranted.

10 REFERENCES

Ballistic Missile Defense Organization. February 2000. *Dismantlement or Destruction of Anti-Ballistic Missile Facilities, Final Environmental Assessment, Stanley R. Mickelsen Safeguard Complex, North Dakota*

Bell Laboratories. October 1975. *ABM Research and Development at Bell Laboratories, Project History.* Prepared for the US Army Ballistic Missile Defense Systems Command

The Earth Technology Corporation. September 1992. *Natural Resources Management Plan for the Stanley R. Mickelsen Safeguard Complex, Cavalier, Pembina, and Walsh Counties, North Dakota*. Prepared for the U.S. Army Strategic Defense Command

The Earth Technology Corporation. April 1993. *Draft Real Property Master Plan for Stanley R. Mickelsen Safeguard Complex, North Dakota.* Prepared for the U.S. Army Space and Strategic Defense Command (USASSDC)

The Earth Technology Corporation. March 1994. *Stanley R. Mickelsen Safeguard Complex Site Investigation and Analysis, Engineering Report*. Prepared by for the U.S. Army Space and Strategic Defense Command

Environmental Protection Inspection and Consulting, Inc. October 1991. *Inspection for Asbestos Containing Materials, Stanley R. Mickelsen Safeguard Complex North Dakota*. Prepared for the US Army Corps of Engineers, Huntsville District

Environmental Protection Inspection and Consulting, Inc. November 1991. *Inspection for Asbestos Containing Materials, Stanley R. Mickelsen Safeguard Complex North Dakota*. Prepared for the US Army Corps of Engineers, Huntsville District

Environmental Protection Inspection and Consulting, Inc. March 1992. *Recommendations for Asbestos Removal and Identification of Hazardous Materials in Non-Tactical Areas, Stanley R. Mickelsen Safeguard Complex*. Prepared for the US Army Strategic Defense Command

Greenwood, G.W., December 1993. *Radon Reduction Program at Stanley R Mickelsen*.

National Missile Defense Joint Program Office. March 2000. *Parcel Specific Environmental Baseline Survey for Potential NMD Program Facilities, Stanley R. Mickelsen Safeguard Complex, North Dakota.*

Stanley R. Mickelsen Safeguard Complex, Vicinity of Nekoma, Cavalier County, North Dakota. September 1996. *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9); Volume 1 - Historical Context and Volume 2 - Architectural Data and Photographs*

TechLaw, Inc. September 1992. *Final Environmental Compliance Report, Missile Site Radar (MSR) and Remote SPRINT Launch (RSL) Sites, Stanley R. Mickelsen Safeguard Complex (SRMSC, North Dakota*. Prepared for U.S. Space and Strategic Defense Command.

Teledyne Brown Engineering . September 1995. *Asbestos Survey Report & Asbestos Management Plan for Asbestos Containing Materials at the Stanley R. Mickelsen Safeguard Complex North Dakota*. Prepared for US Army Space and Strategic Defense Command

Teledyne Solutions, Inc. April 2003. *Stanley R. Mickelsen Safeguard Complex Cultural Resources Management Plan*. Prepared for US Army Space and Missile Defense Command.

U.S. Army Center for Health Promotion and Preventive Medicine. April 1994. *Preliminary Assessment No. 38-26-1321-94, Stanley R Mickelsen Safeguard Complex, Nekoma, North Dakota*. Prepared for the U.S. Army Space and Strategic Defense Command

U.S. Army Center for Health Promotion and Preventive Medicine. July - September 1995. *Final Report, Site Inspection No. 38-EH-3673-95, Stanley R Mickelsen Safeguard Complex, Nekoma, North Dakota*. Prepared for the U.S. Army Space and Strategic Defense Command

US Army Environmental Hygiene Agency. August 1975. *Water Quality Engineering Survey No. 65-102-76, Stanley R. Mickelsen Safeguard Complex, Nekoma, North Dakota, 58350*

U.S. Army Environmental Hygiene Agency, November 1993b. *Memorandum, subject: Results of Analyses of Nekoma, ND Water Samples, Project No. 27-55-EY74, HSHB-ML-RR*

U.S. Army Space and Missile Defense Command. September 1999. *Stanley R. Mickelsen Safeguard Complex North Dakota, Final Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Preliminary Assessment*

U.S. Army Space and Missile Defense Command for the Ballistic Missile Defense Organization. July 2000. *National Missile Defense Deployment, Final Environmental Impact Statement*

U.S. Army Space and Missile Defense Command. June 2000. *Stanley R. Mickelsen Safeguard Complex North Dakota, Final Supplement to the Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Preliminary Assessment*

US Army Space and Missile Defense Command. December 2001. *Stanley R. Mickelsen Safeguard Complex North Dakota, Final Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Site Inspection*

U.S. Geological Survey (USGS), 1964. *7.5 Minute Series Topographic Map, (Hanks Corner Quadrangle, North Dakota)*

USGS, 1970. *7.5 Minute Series Topographic Map, (Langdon West Quadrangle, North Dakota)*

USGS, 1970. *7.5 Minute Series Topographic Map, (Alsen SE Quadrangle, North Dakota)*

USGS, 1972. *7.5 Minute Series Topographic Map, (Edmore Northeast Quadrangle, North Dakota)*

USGS, 1972. *7.5 Minute Series Topographic Map, (Nekoma Northwest Quadrangle, North Dakota)*

USGS, 1972. *7.5 Minute Series Topographic Map, (Nekoma Quadrangle, North Dakota)*

USGS, 1972. *7.5 Minute Series Topographic Map, (Easby Quadrangle, North Dakota)*

TerraServer.Microsoft (from USGS photos), dates of each. Retrieved on Date from www.terraserver.microsoft.com

PERSONS CONTACTED

- Mr. Curtis Erickson, Hazardous Waste Program, ND Department of Health
- Mr. Jerry Greenwood, SRMSC Site Manager, Contractor for KAYA
- Mr. Bob Wilhelmi, local resident and former federal employee

RESOURCES CONSULTED

- Environmental Data Resources, Inc. (EDR) Report for the SRMSC's MSR property and the four RSL sites, 27 October 2009.

- Federal Regulatory Databases
  - National Priority List, 27 October 2009
  - Proposed NPL, 27 October 2009
  - Delisted NPL, 27 October 2009
  - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), 27 October 2009. EPA website reviewed 17 November 2009: Assessment indicates NPL listing not warranted based on current information
  - CERCLIS No Further Remedial Action Planned (CERC-NFRAP), 27 October 2009
  - Corrective Action Report (CORRACTS), 27 October 2009
  - Resource Conservation and Recovery Act Information System (RCRAINFO). EPA website reviewed 17 November 2009: Inactive, last updated 15 September 2000.
  - RCRA - Transporters, Storage and Disposal (RCRA-TSDF), 27 October 2009
  - Solid Waste Landfills/Special Use Landfills (SWF/LF), 27 October 2009
  - State Superfund Site (SHWS), 27 October 2009: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.
  - Leaking Underground Storage Tank List (LUST), 27 October 2009
  - Leaking Underground Storage Tanks on Indian Land (Indian LUST), 27 October 2009

- Underground Storage Tank (UST) Data, 27 October 2009
- Aboveground Storage Tank (AST) Listing, 27 October 2009
- Underground Storage Tanks on Indian Land (Indian UST), 27 October 2009
- List of Brownfields Sites (US BROWNFIELDS), 27 October 2009
- Open Dump Inventory (ODI), 27 October 2009
- Report on Status of Open Dumps on Indian Lands (INDIAN ODI), 27 October 2009
- Land Use Control Information System (LUCIS), 27 October 2009
- RCRA - Non Generators (RCRA-NonGen), 27 October 2009
- Department of Defense Sites (DoD), 27 October 2009
- Formerly Used Defense Sites (FUDS), 27 October 20090
- Superfund (CERCLA) Consent Decrees (CONSENT), 27 October 2009
- Records Of Decision (ROD), 27 October 2009
- Uranium Mill Tailings Sites (UMTRA), 27 October 2009
- Mines Master Index File (MINES), 27 October 2009
- Drycleaner Facility Listing (DRYCLEANERS), 27 October 2009
- Indian Reservations (INDIAN RESERV), 27 October 2009
- Integrated Compliance Information System (ICIS). EPA website reviewed 17 November 2009: No data records returned.
- Toxic Chemical Release Inventory System (TRIS). EPA website reviewed 17 November 2009: No data for TRI On-site and Off-site Reported Disposed of or Otherwise Released for All Chemicals, in zip code 58355 by All Industries during 2007.
- Regional Emergency Management Program. EPA website reviewed 17 November 2009: No data records returned.
- Wastewater Facility Listing (NPDES)

- State and Local Regulatory Databases
  - State Coalition for Remediation of Drycleaners Listing (SCRD DRYCLEANERS), 27 October 2009
  - State and tribal voluntary cleanup sites (INDIAN VCP), 27 October 2009
  - State and tribal Brownfields sites (BROWNFIELDS), 27 October 2009
  - List of Brownfields Sites. EPA website reviewed 17 November 2009: MSR property and the four RSL sites are not on the list.

- EDR Proprietary Records
  - Manufactured Gas Plants

AGENCIES CONTACTED

- North Dakota Department of Health

11 BIBLIOGRAPHY

BMDO, 2000a — Ballistic Missile Defense Organization. February 2000. *Dismantlement or Destruction of Anti-Ballistic Missile Facilities, Final Environmental Assessment, Stanley R. Mickelsen Safeguard Complex, North Dakota*

BMDO, 2000b — U.S. Army Space and Missile Defense Command for the Ballistic Missile Defense Organization. July 2000. *National Missile Defense Deployment, Final Environmental Impact Statement*

HAER, 1996a — Stanley R. Mickelsen Safeguard Complex, Vicinity of Nekoma, Cavalier County, North Dakota. September 1996. *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9); Volume 1 - Historical Context*

HAER, 1996b — Stanley R. Mickelsen Safeguard Complex, Vicinity of Nekoma, Cavalier County, North Dakota. September 1996. *Historic American Engineering Record Documentation for the Stanley R. Mickelsen Safeguard Complex (HAER Number ND-9); Volume 2 - Architectural Data and Photographs*

MFR, 1993 — Memo for Record. 1993. Radon Reduction Program at Stanley R Mickelsen.

MFR, 1998 — Memo for Record. 1998. *Summary Stanley R Mickelsen Safeguard Complex, Installation Restoration Program*.

NMDJPO, 2000 — National Missile Defense Joint Program Office. March 2000. *Parcel Specific Environmental Baseline Survey for Potential NMD Program Facilities, Stanley R. Mickelsen Safeguard Complex, North Dakota.*

USABMDSC, 1975 — Bell Laboratories. October 1975. *ABM Research and Development at Bell Laboratories, Project History.* Prepared for the US Army Ballistic Missile Defense Systems Command

USACE, 1975 — U.S. Army Corps of Engineers, Huntsville Division. January 1975. *Master Plan, Analysis of Existing Facilities, Stanley R. Mickelsen Safeguard Complex, MSR Site, PAR Site, RSL 1, 2, 3, 4.* HNDSP-75-348-ED-CS.

USACE, 1991a — Environmental Protection Inspection and Consulting, Inc. October 1991. *Inspection for Asbestos Containing Materials, Stanley R. Mickelsen Safeguard Complex North Dakota*. Prepared for the US Army Corps of Engineers, Huntsville District

USACE, 1991b — Environmental Protection Inspection and Consulting, Inc. November 1991. *Inspection for Asbestos Containing Materials, Stanley R. Mickelsen Safeguard Complex North Dakota*. Prepared for the US Army Corps of Engineers, Huntsville District

USAEHA, 1975 — US Army Environmental Hygiene Agency. August 1975. *Water Quality Engineering Survey No. 65-102-76, Stanley R. Mickelsen Safeguard Complex, Nekoma, North Dakota, 58350*

USAEHA, 1993 — U.S. Army Environmental Hygiene Agency, November 1993. *Memorandum, subject: Results of Analyses of Nekoma, ND Water Samples, Project No. 27-55-EY74, HSHB-ML-RR*

USASDC, 1992a — Environmental Protection Inspection and Consulting, Inc. March 1992. *Recommendations for Asbestos Removal and Identification of Hazardous Materials in Non-Tactical Areas, Stanley R. Mickelsen Safeguard Complex*. Prepared for the US Army Strategic Defense Command

USASDC, 1992b — The Earth Technology Corporation. September 1992. *Natural Resources Management Plan for the Stanley R. Mickelsen Safeguard Complex, Cavalier, Pembina, and Walsh Counties, North Dakota*. Prepared for the U.S. Army Strategic Defense Command

USASMDC, 1999a — US Army Space and Missile Defense Command. September 1999. *Stanley R. Mickelsen Safeguard Complex North Dakota, Final Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Preliminary Assessment*

USASMDC, 1999b — US Army Space and Missile Defense Command. September 1999. *Stanley R. Mickelsen Safeguard Complex North Dakota, Draft Environmental Impact Statement*

USASMDC, 2000a — U.S. Army Space and Missile Defense Command. June 2000. *Stanley R. Mickelsen Safeguard Complex North Dakota, Final Supplement to the Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Preliminary Assessment*

USASMDC, 2000b — U.S. Army Space and Missile Defense Command. December 2000. *National Missile Defense Deployment, Final Environmental Impact Statement*

USASMDC, 2001 — US Army Space and Missile Defense Command. December 2001. *Stanley R. Mickelsen Safeguard Complex North Dakota, Final Comprehensive Environmental Response, Compensation, and Liability Act, Expanded Site Inspection*

USASMDC, 2003 — US Army Space and Missile Defense Command. April 2003. *Stanley R. Mickelsen Safeguard Complex Cultural Resources Management Plan*. Prepared by Teledyne Solutions, Inc.

USASSDC, 1992 — TechLaw, Inc. September 1992. *Final Environmental Compliance Report, Missile Site Radar (MSR) and Remote SPRINT Launch (RSL) Sites, Stanley R. Mickelsen Safeguard Complex (SRMSC, North Dakota*. Prepared for U.S. Space and Strategic Defense Command.

USASSDC, 1993 — The Earth Technology Corporation. April 1993. *Draft Real Property Master Plan for Stanley R. Mickelsen Safeguard Complex, North Dakota.* Prepared for the U.S. Army Space and Strategic Defense Command (USASSDC)

USASSDC, 1994a — The Earth Technology Corporation. March 1994. *Stanley R. Mickelsen Safeguard Complex Site Investigation and Analysis, Engineering Report*. Prepared by for the U.S. Army Space and Strategic Defense Command

USASSDC, 1994b — U.S. Army Center for Health Promotion and Preventive Medicine. April 1994. *Preliminary Assessment No. 38-26-1321-94, Stanley R Mickelsen Safeguard Complex, Nekoma, North Dakota*. Prepared for the U.S. Army Space and Strategic Defense Command

USASSDC, 1995a — Teledyne Brown Engineering . September 1995. *Asbestos Survey Report & Asbestos Management Plan for Asbestos Containing Materials at the Stanley R. Mickelsen Safeguard Complex North Dakota*. Prepared for US Army Space and Strategic Defense Command

USASSDC, 1995b — U.S. Army Center for Health Promotion and Preventive Medicine. July - September 1995. *Final Report, Site Inspection No. 38-EH-3673-95, Stanley R Mickelsen Safeguard Complex, Nekoma, North Dakota*. Prepared for the U.S. Army Space and Strategic Defense Command

USGS, 1964 — U.S. Geological Survey (USGS), 1964. *7.5 Minute Series Topographic Map, (Hanks Corner Quadrangle, North Dakota)*

USGS, 1970a — USGS, 1970. *7.5 Minute Series Topographic Map, (Alsen SE Quadrangle, North Dakota)*

USGS, 1970b — USGS, 1970. *7.5 Minute Series Topographic Map, (Langdon West*

Quadrangle, North Dakota)

USGS, 1972a — USGS, 1972. *7.5 Minute Series Topographic Map, (Billings Lake Quadrangle, North Dakota)*

USGS, 1972b — USGS, 1972. *7.5 Minute Series Topographic Map, (Edmore Northeast Quadrangle, North Dakota)*

USGS, 1972c — USGS, 1972. *7.5 Minute Series Topographic Map, (Nekoma Quadrangle, North Dakota)*

USASMDC, 2000 — National Missile Defense Deployment, Final Environmental Impact Statement. December 2000.

12 PROFESSIONAL QUALIFICATIONS

John Phelps, CSP, is a Certified Safety Professional in USACE Omaha District office. He earned a Masters Degree in Industrial Hygiene from the University of Central Missouri in 1997 and for the last 9 years, Mr. Phelps has worked as a Safety and Environmental professional for the Omaha District of the U.S. Army Corps of Engineers. He has conducted extensive historical research into activities and potential contamination issues at numerous former Army Air Fields and missile sites. Before coming to the Omaha District, he served as the Chief, Environmental Compliance Section at Whiteman Air Force Base (AFB), Missouri, for three years where he was responsible for base-wide environmental compliance in air, asbestos, lead paint, underground storage tank, and hazardous material storage and disposal programs. Prior to that, he served as the Deputy, Environmental Restoration Program for three years where coordinated former small arms range remediation with State regulators and completely addressed historical pesticide contamination in the Whiteman AFB's Military Family Housing area.

Melissa Kemling, Certified Hazardous Materials Manager (CHMM), is a physical scientist in the USACE Omaha District office. She holds a Masters Degree in Geography and has significant experience working with sites where subsurface contamination is known or suspected to exist at industrial and commercial facilities associated with the use, storage, or handling of solvents and petroleum fuel. She has extensive experience in managing the regulatory aspects of RCRA and CERCLA sites. Ms. Kemling has experience conducting ASTM Standard Phase I and Phase II Environmental Site Assessments (ESAs) and reviewing contract submitted ESA’s in support of real estate transactions.